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CANCER CONTROL:

A State Plan for Massachusetts

Massachusetts Department of Public Health
Regional Cancer Control Committee
Sidney Farber Cancer Institute
1981

CANCER CONTROL: A STATE HEALTH PLAN FOR MASSACHUSETTS

The Cancer Control Component
1980 Massachusetts State Health Plan Update

Massachusetts Office of State Health Planning
Massachusetts Statewide Health Coordinating Council

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I. INTRODUCTION

As a result of the dramatic change in mortality and morbidity patterns since the turn of the century, cancer has assumed a rank as one of the highest public health priorities during the past several decades. In spite of significant improvements in our ability to treat and cure several kinds of cancer there has been a slow but steady increase in the incidence and mortality rates of other cancers, in particular lung cancer. Cancer remains the second leading cause of death in Massachusetts and nationally; within Massachusetts 22.4% of deaths in 1977 were due to cancer.[1] Nationally, it is estimated that one out of every four persons now living will eventually die of some kind of cancer, and that over the years, cancer will strike in approximately two of every three families.[2]

The term cancer actually refers to a group of more than 100 distinct diseases which behave similarly enough in the disease process to be collectively called "cancers," but behave differently in ways that result in quite varied health and medical interventions for the specific disease. Cancer is thus more accurately used to describe a disease process rather than a disease entity. This process results when mechanisms within cells that control normal cell tissue growth are impaired. Normal cells mutate (the genes or chromosomes become abnormal); these new mutated cells then grow in a manner that characterizes cancer. This abnormal growth pattern is characterized by tissue spread to normal adjacent structures and migration through the body with growth in new regions. It is not known what causes these cells to mutate, and it is possible that the causes may be multiple.

Scientists have, however, made progress toward a better understanding of what factors give rise to that activity and what predisposes individuals to develop cancer. This knowledge of particular environmental carcinogens (agents that have been shown to produce cancer in humans), co-carcinogens (agents that act with another to cause cancer), and risk factors (characteristics that put a person at greater risk than others to develop certain kinds of cancer) is important in developing cancer programs for prevention, screening and early detection. It is estimated that one-fourth to one-third of all cancer deaths in the United States are now avoidable through the prevention or early diagnosis of cancer.[3]

Cancer patients constitute an important group of users of the health care system. Most cancer patients (except those with certain cancers of the skin) need hospital-based services and continuing care services once cancer is diagnosed. Also, because of the nature of the "cancers," events such as recurrence at the primary site, metastases to secondary sites, and the cyclical pattern of remission and regression may result in cancer patient readmissions for acute care many years after the initial diagnosis. Continuing care and careful monitoring in follow-up are therefore critical to effective patient management.

Progress in the development of improved technology to prevent, detect and treat cancers successfully has been agonizingly slow. However, reductions in the current impact cancer has on the population are possible with a more aggressive public health contribution. For example, where prevention, screening and detection of certain cancers is possible, more effective programs must be designed, implemented and evaluated. When new successful treatment modalities become available, public health initiatives can help ensure their accessibility to the cancer patient. The planning component of a public health initiative in cancer control can provide substantial assistance in these and other efforts. To some degree, the lack of planning support for cancer control efforts is responsible for the relative lack of success of recent public health program development in cancer.

Cancer planning has not been a high priority of early regional and state health plans that have been developed pursuant to P.L. 93-641. This is partially due to the fact that the development of these plans has been dominated by a resource-based, as differentiated from a population-based, approach to planning. This former approach is far from optimal for systematic examination of categorical problems such as cancer that involve all health care sectors. Secondly, cancer is a group of diseases about which we have varying degrees of knowledge concerning causation, morbidity patterns and useful programs for control. Thirdly, data are sadly lacking (1) on the actual incidence and prevalence of cancers in Massachusetts; (2) on the presence and impact of various environmental carcinogens and risk factors on Massachusetts residents; and (3) on the patterns of use of our health resources and the effectiveness with which these resources are deployed. Finally, there has been a lack of clarity on the potential cooperative roles of different health care institutions and organizations in providing cancer control services. Initially, it is these key areas that planners must address in developing a coordinated comprehensive cancer control system.

In spite of the problems mentioned above, all regional and state health planning agencies in Massachusetts have attempted to provide some direction for cancer initiatives in their recent plans. Most have discussed specific cancer problems within the the prevention, acute or long term care components of their Health Systems Plans, and a few have begun planning initiatives in development of operating cancer management systems at the regional level. Specific priorities mentioned in plans written to date include:

(1) improved data bases for the identification of actual morbidity patterns in cancer for Massachusetts;

(2) identification and reduction of environmental and occupational hazards;

(3) development and/or improvement of regional cancer management systems;

(4) reduction of smoking;

(5) expansion of programs for screening and early detection (including breast self-examination, colorectal screening, public education, etc.);

(6) availability of radiation therapy services, and the role of radiation therapy in cancer management; and

(7) availability of adequate terminal care programs, and feasibility studies for hospice programs.

In order to develop appropriate planning targets which address both site-specific cancer problems as well as health systems issues, it is important to have an understanding of both the current knowledge about etiology and epidemiology of specific cancers as well as procedures, programs and treatments that are known to have some impact on those cancers. In addition, planners must support the increased cooperative involvement of cancer specialists, planners and other agencies in examining community needs, determining priorities for programs that respond to these needs, and most efficiently deploying their collective resources in designed cancer control efforts. By utilizing both the current knowledge and the cooperative input of those involved in cancer care, it is possible to develop long range plans for improving the availability, accessibility, quality and efficiency of our limited resources in delivering all the components of comprehensive cancer care in a coordinated manner.

It is felt that many of these cancer issues will take several years to address. Therefore, the Massachusetts Statewide Health Coordinating Council proposes to undertake a long term effort to develop a state cancer control plan. An incremental approach will be used to develop this component of the State Health Plan. Future expansion and refinement will occur as major planning objectives in areas such as institutional roles, data and evaluation, manpower, use of population-based planning methods and other areas are completed. The intent of this first year component is to define the scope of the proposed cancer control plan; identify the major planning needs to complete a definitive plan; and provide direction for planning policy development and implementation priorities in the next few years. While this year's component as well as future revisions will concentrate on a systems approach to cancer as a generic categorical problem, it is hoped that consistent attention will also be paid to site-specific cancer issues as appropriate. And while this first cancer control plan has been presented as a separate component to allow for an integrated presentation of cancer issues and proposed directions, future revisions and expansions, where possible, will be integrated into appropriate resource components of the plan.

II. HEALTH STATUS

A. Introduction

The Health Status Component of this State Health Plan describes the importance of examining the health status of a population and why its measurement is a critical first step in any health planning process. This is especially true when focusing on cancer. Cancer is actually a group of diseases, each being distinguished by a different anatomic site with different disease characteristics and health care implications. Knowledge of the distribution of each of these cancers is therefore essential and allows the health planner to: (1) identify the needs of the population, so that new programs can be initiated or current programs refocused to meet those needs; and (2) monitor the effectiveness of the various components (prevention through continuing care) of cancer management. It is important that such data be used in these ways. First, they allow the criteria for resource allocation to be the needs of the population in terms of the actual level of health status. Second, when tied to the provision of health services, they are indicators of how well those services are functioning. Particularly, the incorporation of accurate data collection into a cancer management system serves not only to measure the impact of that system's components, but also to signal the need for shifts in resources to more effective components (for example, from treatment to prevention).

Several tools are available to measure health status with respect to cancer. Mortality data are the most accurate and obtainable, but morbidity provides the best measure because it examines the actual level of disease in a population. An additional measure is the presence of predisposing, or risk, factors to cancer, which do not directly measure health status, but allow anticipation of future health problems.

B. Cancer Mortality

1. Uses as a Health Status Measure

Cancer mortality does not directly measure the frequency of cancer as a disease, but rather the final event in that disease process. It depends on two factors: the number of people with each type of cancer (prevalence) and the likelihood of death from each type (case-fatality). Without knowledge of both of these, one does not know if an increase in the death rate for a cancer site was caused by more people having the disease or by the disease *per se* having a greater probability of death. Consequently, only in cases where survival time is short, for example with lung cancer, can mortality figures provide reasonable estimates of the level of illness.

Despite this inherent limitation and those alluded to in the Health Status Component, mortality data are currently the most reliable and available data with which to measure health status. In Massachusetts, furthermore, they are the only primary data available in

regard to cancer. Currently available mortality information in Massachusetts can be used to indicate problem areas with respect to health status in cancer. Other tools, such as in-depth studies into occupational patterns, lifestyle factors and other possible causative associations, must then be employed to identify the problem.

2. Types of Measures

Mortality rates are generally expressed as crude, specific or adjusted. Each of these different types has its own usefulness when measuring cancer mortality.

For cancer, crude mortality rates relate the total number of cancer deaths in an area to the population of that area. For example, the crude mortality rate for cancer in Massachusetts in 1977 was 197.2 per 100,000 population.[4] These data provide only the broadest of health status measures, however, for they do not differentiate among the various cancer sites or population characteristics that affect the mortality rate, such as age, sex and race.

These other factors can be taken into account by examining specific mortality rates. It is epidemiologically more valid, though more tedious, to compare the death rates between subgroups that are somewhat homogeneous. By using specific rates, for example, the death rate for lung cancer in males 45 to 64 years of age can be compared between two HSAs. This approach is taken in the following section on analyzing mortality data in Massachusetts.

Finally, adjusted mortality rates completely eliminate the effects due to these intervening variables. Mortality rates can be directly or indirectly adjusted, and adjustments are usually made for age. In direct adjustments, the specific rate is applied to a standard population. In 1975, the direct age-adjusted mortality rate for all cancer in Massachusetts was 137.0 per 100,000 population. In the indirectly adjusted rate, the standardized mortality ratio (SMR) is the most frequently used measure. In the following section, SMRs in Massachusetts are examined; they are constructed by relating the observed number of cancer deaths in the population of an area to the number expected if the specific death rate for the entire state was applied to that area.

3. Analysis of Available Data

As discussed in the Health Status Component, cancer is the second leading cause of death in Massachusetts and the United States. In 1977, 11,557 residents of this state died of cancer; this represented 22.4% of all deaths.

Chart 1
Cancer Deaths Related to Total Deaths
Massachusetts 1969 to 1977

	1969	1970	1971	1972	1973	1974	1975	1976	1977
Cancer Deaths	10,650	10,596	11,070	10,983	11,160	11,326	11,596	11,595	11,557
Total Deaths	57,695	56,944	56,932	56,854	57,179	55,776	53,706	53,980	51,626
% Deaths Due to Cancer	18.5	18.6	19.4	19.3	19.5	20.3	21.6	21.5	22.4

As shown in Chart 1, the annual number of deaths due to cancer has risen during the period 1969 to 1977, while annual mortality from all causes has dropped more than 10 percent. This has resulted in an increase in the percentage of deaths due to cancer - a figure which has risen steadily during the nine-year period.

a) specific cancer mortality rates, 1969-1977

The annual mortality rate for all cancers combined has been increasing. This is shown in Chart 2 which examines the overall rate and those for twelve selected cancer sites by three-year periods (1969-1971, 1972-1974, and 1975-1977). The overall increase between these periods was from 189.7 to 198.5 deaths (4.4%) per 100,000 population. The chart also indicates that mortality rates for individual cancer sites did not vary to a large degree except in the case of lung cancer, which increased 15.2%. This accounted for much of the increase in the overall rate, for by excluding lung cancer from the total, one finds an annual mortality rate increase that is substantially smaller (from 155.5 to 158.3 deaths per 100,000).

Consistent with the U.S. as a whole, lung, colorectal and breast cancers remain as the leading causes of cancer mortality with 40.2, 30.7 and 19.4 deaths per 100,000 respectively in 1975-1977 (The rate for prostate cancer was determined using just the male population in the denominator).

After mortality rates that are specific for the major cancer sites are examined and problem areas (such as lung cancer) are noted in Massachusetts, the next level of investigation is to get a closer look at these suggested problems. This is done for lung cancer in Chart 3, where age- and sex-specific mortality rates are displayed for each of the three-year periods. Where the lung cancer rate was noted earlier as increasing, the data illustrate that the greatest increase occurred in population subgroup: females aged 65 and above.

Further investigation is possible by examining another factor possibly affecting the mortality rate: place of residence. When

Chart 2

Selected Cancer Sites
Average Annual Number of Deaths and Mortality Rates
Massachusetts 1969-1977

	1969-1971		1972-1974		1975-1977	
	Average Annual Number Deaths	Average Annual Mortality Rate*	Average Annual Number Deaths	Average Annual Mortality Rate*	Average Annual Number Deaths	Average Annual Mortality Rate*
Lung	1937	34.1	2198	38.2	2347	40.2
Colon-Rectum	1695	29.8	1778	30.9	1792	30.7
Breast	1101	19.4	1085	18.9	1134	19.4
Pancreas	557	9.8	596	10.3	597	10.2
Prostate	512	18.9	535	19.5	557	20.0
Stomach	587	10.3	567	9.8	525	9.0
Leukemia	421	7.4	385	6.7	417	7.2
Lymphoma	417	7.3	400	6.9	396	6.8
Ovary	343	11.5	325	10.8	329	10.8
Bladder	302	5.3	306	5.3	307	5.3
Cervix Uteri**	164	5.5	151	5.0	133	4.3
Corpus Uteri	73	2.4	65	2.2	80	2.6
All Sites	10,772	189.7	11,156	193.8	11,583	198.5

*Per 100,000 population at risk (thus, the rates for cervix uteri, corpus uteri, and ovary are expressed per 100,000 female population; and those for prostate per 100,000 male population)

**invasive only.

Chart 3

Lung Cancer
Average Annual Number of Deaths and Mortality Rates
By Age-Group and Sex
Massachusetts 1969-1977

		1969-1971		1972-1974		1975-1977	
		Average Annual Number Deaths	Average Annual Mortality Rate*	Average Annual Number Deaths	Average Annual Mortality Rate*	Average Annual Number Deaths	Average Annual Mortality Rate*
0-14	Male	0	0	0	0	0	0
	Female	1	0	0	0	0	0
	Total	1	0	0	0	0	0
15-44	Male	42	3.8	43	3.6	38	3.0
	Female	18	1.6	24	1.9	28	2.1
	Total	61	2.7	66	2.7	66	2.5
45-64	Male	638	112.6	688	120.4	657	114.1
	Female	185	28.7	224	34.5	258	39.6
	Total	824	70.0	911	74.7	915	74.5
65+	Male	864	352.5	975	385.2	1039	397.7
	Female	188	48.1	243	60.4	327	79.0
	Total	1053	165.4	1219	185.8	1366	202.2
All Ages	Male	1545	57.0	1706	62.1	1734	62.4
	Female	392	13.2	491	16.3	613	20.1
	Total	1937	34.1	2197	38.2	2347	40.2

*Per 100,000 population

depicted by HSA of residence, what emerges is that three of the HSAs (I,IV and VI) had the highest and similar mortality rates for lung cancer in females aged 65 and above are increases. Thus, further studies are needed at the HSA level to determine the cause of this problem. All of the HSAs have dealt with lung cancer in their Health Systems Plans by calling for a wide range of anti-smoking measures.

Chart 4

Lung Cancer in Females Aged 65 and Over
Average Annual Mortality Rate Per 100,000 Population
Massachusetts 1969 to 1977

HSA	1969-71	1972-74	1975-77
I	40.2	54.4	73.6
II	45.9	52.8	54.4
III	43.6	51.6	60.1
IV	51.7	65.4	94.3
V	49.6	55.6	70.2
VI	49.0	71.1	85.6

This approach to examining health status in cancer and suggesting problem areas is useful in dealing with the complex epidemiology of cancer. Other cancer sites can be investigated in the same way. This is true even if the overall mortality rate for that site is not found to be changing significantly. Counteracting changes in mortality between subgroups can be masked unless each specific mortality rate can be examined.

Female breast cancer illustrates this point. It is the leading cause of cancer mortality in women in Massachusetts and nationally. The mortality rate for all ages shown in Chart 5 has been steady over the past nine years. When one looks at the four age-groups, however, there is a steady decrease in the rate for ages 15 to 44 and an increase for ages 65 and above. Shifts in mortality rates can be further shown with age-specific rates according to the HSA of residence. Here selected rates are shown that have exhibited the greatest changes over this period. In HSA III, the rate for ages 45 to 64 has increased 20%. In HSA VI, the rate has been decreasing for ages 45 to 64 and increasing for ages 65 and above. Both of these HSAs have addressed the issue of the early detection of breast cancer in their Health Systems Plans.

Chart 5
Female Breast Cancer
Average Number of Deaths and
Annual Mortality Rate Per 100,000 Females
Massachusetts 1969 to 1977

Age-Group	1969-71 Number	1969-71 Rate	1972-74 Number	1972-74 Rate	1975-77 Number	1975-77 Rate
0-14	1	0	0	0	0	0
15-44	254	7.3	218	5.7	180	4.4
45-64	1472	76.1	1361	67.3	1402	71.7
65+	1553	132.3	1655	137.0	1798	144.7
all ages	3279	36.8	3234	35.8	3380	36.9

Chart 6
Female Breast Cancer
Annual Mortality Rates Per 100,000 Females
Massachusetts 1969 to 1977

Age-group	HSA	1969-1971	1972-1974	1975-1977
45-64	III	69.9	58.3	87.0
45-64	VI	79.2	74.7	64.7
65+	VI	123.6	125.6	162.9

b) standardized mortality ratios, 1974-1976

Colon-rectum cancer, the second leading cause of cancer mortality in Massachusetts, is examined in this section through the use of standardized mortality ratios (SMRs) for the period of 1974 to 1976.[5] Chart 7 shows SMRs in Massachusetts according to HSA subarea. Three unusually high subareas are indicated: two in HSA V (Taunton, Fall River) and one in HSA VI (Greater Lynn).

As with specific mortality rates, the next level of investigation involves getting a closer look at these suggested problem areas according to age and sex. While all of the sex-specific SMRs in these subareas were high, two of them had exceptionally high values: females in Taunton and males in Greater Lynn. The highest age-specific SMRs generally occurred in the 65 and over age-group (range of 124 to 143 in the three subareas).

Chart 7

Colon-Rectum Cancer
Actual and Expected Number of Deaths,
Standardized Mortality Ratios
By HSA Subareas
Massachusetts 1974-1976

	Actual # Deaths	Expected # Deaths	S.M.R.
HSA I			
11-Berkshire	141	153.0	92
12-Northern Valley	153	152.9	100
13-Southern Valley	438	457.1	96
Total	732	763.0	96
HSA II			
21-North	137	173.3	79
22-Central	245	265.3	92
23-South	144	182.4	79
Total	526	621.0	83
HSA III			
31-Lowell-Tewksbury	174	157.9	110
32-Lawrence-Andover	147	144.0	102
33-Greater Newbury	103	109.2	94
Total	424	411.1	102
HSA IV			
41-Central Metro	795	787.3	101
42-Northwest Metro	399	399.7	100
43-West Metro	384	397.0	97
44-Southwest Metro	121	123.7	98
45-South Metro	304	299.2	102
Total	2003	2006.9	100
HSA V			
51-Attleboro	60	60.0	100
52-Brockton	144	151.4	95
53-Plymouth	85	86.5	98
54-Taunton	111	83.5	133
55-Fall River	185	158.9	116
56-New Bedford	186	173.7	107
57-Cape Cod	214	211.2	101
Total	985	925.2	107
HSA VI			
61-Cape Ann	96	99.9	96
62-Danvers-Salem	123	118.3	104
63-Greater Lynn	179	140.4	127
64-Eastern Middlesex	109	104.9	104
65-Tri-Cities	187	172.2	109
Total	694	635.7	108

The lowest SMRs occurred in all three subareas of HSA II. One area of further investigation could be a comparison of those subareas with the highest and lowest SMRs. Examination could be made of demographic and industrial characteristics, together with the availability of cancer management services.

C. Cancer Morbidity

1. Uses as a Health Status Measure

The Health Status Component has discussed the advantages of using morbidity data and its lack of availability and uniformity across various sources. This is especially true for cancer morbidity data, which provide the best measure of health status by focusing on the extent of cancer as a disease process. Similar to mortality data, they can be used by the health planner to indicate problem areas for further study.

Actual cancer morbidity data are not currently available in Massachusetts. While this information is kept by several tumor registries within the state, it is not sufficient at this time to serve as population-based morbidity for two reasons. First, a system for extracting geographically-based morbidity from tumor registries has not yet been developed. Second, the tumor registries in this state do not currently cover the entire state population.

2. Types of Measures

For cancer, there are four types of morbidity measures. Incidence and prevalence are the two basic types; they measure the level of cancer morbidity for the entire population at risk. Disability and staging are measures that focus on patients diagnosed with cancer.

Incidence is the number of new cases occurring during a specific time period, usually one year, in a defined population, and is the most frequently used measure of cancer morbidity. The incidence rate is the rate of occurrence of the disease and thus reflects an individual's chances of developing cancer as compared to the population used. It depends not on treatment or survival, but on the accuracy and extent of detection. Incidence data are usually obtained through in-depth surveys (of medical records, pathology reports, etc.) or geographically-based tumor registries.

As discussed above, actual cancer incidence data are not currently available in Massachusetts. Such data would be beneficial to state government for cancer planning and policy development; to regional and local cancer control groups for setting priorities in program development; and for researchers and epidemiologists for investigating environmental links to cancer causation. The most viable

approach for obtaining these data is the establishment of a statewide cancer incidence registry, together with the requirement that cancer be a reportable disease. This registry should be operated by the Massachusetts Department of Public Health, to make the data available to the widest range of users.

In the absence of actual cancer incidence data, synthetic estimates for Massachusetts can be created by extrapolating from the incidence rates of populations where actual incidence data are collected. Using these estimates, specific incidence can be examined, similar to what was done with mortality rates. This is done in the following section using data for 1977 from the Conneticut Tumor registry and for 1969-1971 from the Third National Cancer Survey. These represent only rough estimates, however, and much caution should be exercised in interpreting them. They only adjust for age and sex and do not include peculiar differences in the populations, such as the availability of better detection methods or a substantial number of people engaged in industrially-related occupations.

Prevalence is the number of people with cancer (newly diagnosed or not) in a defined population during a given year. It is a function not only of the number of new cases (incidence) but also the degree to which patients are surviving due to better treatment (survival). Thus it bridges the gap between health status and the efficacy of treatment (health systems). It is very difficult to collect prevalence data, as evidenced by the fact that the very sophisticated Connecticut Tumor Registry can only generate estimates of it.

Disability, the level of functional impairment, is an important measure of the health status of the cancer patient. Examination of disability data by cancer management systems can lead to more effective planning for continuing care services, for example. Cancer-related disability data are only available at the national level from the 1972 Survey of Disabled and Nondisabled Adults. These data are not sufficient to use as a health status measure, since they were gathered through interviews and are not specific for cancer sites.

Staging, the assessment of the morphologic extent of the disease, is important to planning because cancers of the same site can differ according to their degree of progression. For cancer, morbidity codes such as the TNM staging system have been developed. They are primarily used to assist in treatment decision-making, and their applicability as a health status measure is an area of investigation for the future.

3. Analysis of Available Data

Two databases are used here to create synthetic estimates of cancer incidence in Massachusetts: the Connecticut Tumor Registry and the Third National Cancer Survey. As stated previously, both sources provide only rough estimates. Of the two, Connecticut data are the most applicable to Massachsetts.

Chart 8

Selected Cancer Sites
Estimated Number of New Cases
By Age-group and Sex
Based on the Connecticut Tumor Registry
Massachusetts 1977

		Colon-Rectum	Lung	Breast	Cervix*	Prostate	Bladder	All Cancers
0-14	Male	0	0	0	-	0	0	69
	Female	0	0	0	0	-	0	54
	Total	0	0	0	0	0	0	123
15-44	Male	52	63	0	-	4	25	720
	Female	38	40	371	944	-	16	1960
	Total	90	103	371	944	4	41	2680
45-64	Male	609	784	18	-	323	241	3548
	Female	507	372	1517	232	-	113	4521
	Total	1116	1156	1535	232	323	354	8069
65+	Male	1246	1269	16	-	1467	479	6498
	Female	1496	469	1391	120	-	194	6191
	Total	2742	1738	1407	120	1467	673	12,689
All Ages	Male	1907	2116	34	-	1794	745	10,835
	Female	2041	881	3297	1296	-	323	12,726
	Total	3948	2997	3331	1296	1794	1068	23,561

*both invasive and in-situ

a) Connecticut Tumor Registry[6]

Incidence data from this registry are particularly useful for Massachusetts because the two states have similar cancer mortality rates, populations, and industrial patterns. In Chart 8, age- and sex-specific incidence rates were applied to the estimated 1977 Massachusetts population. Of the greater than 23,000 estimated new cases of cancer, colon-rectum cancer had the highest (3948), followed by breast cancer (3331) and lung cancer (2947). For each type of cancer, there is a particular distribution of occurrence by age and sex. Lung and bladder cancers affect more men than women. Cervical cancer (due mostly to in-situ cases) occurs mostly in the 15 to 44 age group.

b) Third National Cancer Survey (TNCS)[7]

This survey, conducted under the aegis of the National Cancer Institute, was conducted from 1969 to 1971 and provides incidence information on age, sex and race for nine geographic areas comprising about 10% of the U.S. population. The data are quite accurate, but there are several problems with applying it to other populations. Because it was not a random sample and only included areas where the technical capability to carry out the survey existed, rural areas were underreported, nonwhite racial groups were overestimated, and the entire Northeast was excluded. Also, the data apply to the period 1969 to 1971, and incidence patterns may have changed since then.

Chart 9 shows the estimated number of new cases in Massachusetts in 1977 for all cancers and for each of the six major sites. These were obtained by applying the age- and sex-specific rates from the TNCS to the estimated 1977 Massachusetts population. The estimated total number of cancer cases was 19,265. This is lower than the estimate from Connecticut and possibly reflects the time and population differences between the two samples. The relative proportion of each of the cancer sites remains the same, with colon-rectum (2910), breast (2664) and lung (2486) heading the list.

D. Risk Factors

Risk factors predispose a person to developing cancer, i.e., they place him or her at a greater risk of getting certain kinds of cancer. Knowing the extent of the existence of risk factors within a defined population can fulfill two functions in regard to measuring health status: (1) as broad measures of health status, similar to morbidity and mortality, where they serve to suggest problem areas; and (2) as tools to investigate problems suggested by morbidity and mortality, where they can further define the problem (and even identify it, if a causative role has been established for the risk factor). Knowing the level of risk factors present does not allow the health planner to directly measure health status, but to anticipate what health problems in cancer will be developing. When one considers the long latency period involved, it becomes important to monitor not only the occurrence of cancer (which may be 20 years after the interaction of risk factors), but also the conditions that increase the probability of developing the disease.

Chart 9

Selected Cancer Sites
Estimated Number of New Cases
By Age-group and Sex
Based on the Third National Cancer Survey
Massachusetts 1977

		Colon-Rectum	Lung	Breast	Cervix*	Prostate	Bladder	All Cancers
0-14	Male	<1	<1	0	-	< 1	1	82
	Female	< 1	<1	0	< 1	-	< 1	67
	Total	1	1	0	0	0	0	149
15-44	Male	57	88	1	-	4	27	660
	Female	56	38	374	199	-	9	1199
	Total	113	126	375	199	4	36	1859
45-64	Male	434	867	7	-	269	185	3179
	Female	422	243	1175	222	-	253	3640
	Total	856	1110	1182	222	269	438	6819
65+	Male	867	1013	11	-	1316	393	5452
	Female	1074	237	1096	163	-	167	4986
	Total	1941	1250	1107	163	1316	560	10,438
All Ages	Male	1358	1968	19	-	1589	606	9373
	Female	1552	518	2645	584	-	429	9892
	Total	2910	2486	2664	584	1589	1035	19,265

*both invasive and in-situ

Many different kinds of health status measures are possible when considering risk factors. Essentially one looks at the number of persons who are at risk, e.g., who smoke, who are exposed to carcinogens in the workplace or through ambient air, who have family history of certain cancers (familial susceptibility), who are exposed to certain levels of ionizing radiation, or who have developed certain precancerous lesions. All of these measures, however, are very difficult to construct and are currently not available in Massachusetts. The Prevention and Health Promotion Component addresses some measures of the "at riskness" of the people of Massachusetts by examining national estimates of smoking behavior and estimates of the number of workers in this state exposed to various cancer-causing substances.

Approaches to obtaining risk factor data in Massachusetts should be explored. One useful method is through an occupational and lifestyle history on persons as they are diagnosed to have cancer. This information could be kept in tumor registries throughout the state. If the incidence of cancer could be correlated to such factors as specific occupations, occupational settings, or lifestyle experiences, problem identification would be greatly enhanced.

E. Conclusion

Certain issues appear through this chapter and are summarized here:

(1) the actual problems suggested by available mortality data (specific problems of lung, female breast, and colon/rectum cancers have been indicated);

(2) the lack of morbidity data in Massachusetts;

(3) the necessity to use health status data in cancer appropriately; and

(4) the lack of accurate data in Massachusetts on the degree to which the known causes of cancer are present and influence morbidity.

The need for accurate cancer health status data was emphasized in the introduction. Particularly, the incorporation of this data collection and analysis into a cancer management system is of great importance. This is evident in the following chapter on health systems, which indicates that the availability and coordination of cancer services depend on accurate data. A related objective for securing needed databases is included in the Goals, Objectives and Recommended Actions chapter. As future revisions of the State Health Plan deal more precisely with cancer sites discussed here as well as introduce analyses of additional sites, the cancer-related needs of the Massachusetts population will be more clearly identified

III. HEALTH SYSTEMS

Almost all sectors of the health care system are involved to some degree in the control of cancer, either by efforts to reduce the occurrence or by trying to reduce the morbidity and mortality due to the disease through effective detection, diagnosis, treatment and continuing care services. It is understandable that program priorities, methods and policies about how and to whom services should be delivered will vary among the many individual providers, institutions and organizations involved in cancer control. It is desirable that these policies support efficient, effective delivery of the total range of services to a specific population. Provider coordination within each phase of care, as well as through different phases of care (prevention, treatment and continuing care) is important if providers are to effectively respond to the population's needs and make best use of their resources in doing so. Coordination of providers particularly within acute care has been taking place in recent years, and improved patient care is resulting. Coordination between professionals in prevention, treatment and continuing care, however, has been somewhat less active. This type of coordination is particularly useful because problems discovered in one component may point out the need to refocus priorities of another component. For example, data on the stage of disease for cancer patients entering acute care may suggest critical regional needs for certain prevention, screening or detection programs; similarly, assessment of cancer patient needs for continuing care while the patient is in the hospital can help assure the availability of needed services post-discharge.

When these elements of communication, coordination and cooperative policy development are initiated by all individuals and groups involved in reducing the impact of cancer, and are combined with an orientation to meeting a geographic population's needs, sound cancer management systems develop. A cancer management system in its optimal form would serve a total population within a geographic area; it would have as its goal the efficient and effective use of its resources to apply current knowledge about cancer prevention, screening, detection, diagnosis, pretreatment evaluation, treatment and continuing care to the population it serves. A cancer management system thus implies not only effective management of the cancer patient through all phases of treatment (the more traditional definition of cancer management system) but also responsibility for prevention and continuing care to its population. Specific regional goals for cancer management systems and the roles each resource can play in these efforts have not been developed.

Following is an overview of the different interventions within cancer management, a discussion of some of the major issues within each component, and presentation of data on health resource utilization in Massachusetts by cancer patients where it is available.

A. Prevention, Sc eening and Detection

Planning in this area is one of the most complex tasks in cancer control, and one of the most critical. Many strategies in this sector involve changes in life style behaviors, changes in the environment, and changes in medical practice which are not easy to produce. These

strategies may involve the active participation of the public, government, the health care system and others. Different types of cancers may or may not be amenable to different interventions in this section; planning and designed implementation strategies must often therefore be disease specific.

Prevention is defined here in its narrowest sense, or what is typically called primary prevention: blocking the occurrence of the disease itself.[8] This may result from individual action to separate a person from a carcinogenic agent, such as smoking cessation; or by the application of specific protective measures to remove the agent or interfere with the effect of the agent on the person, such as bringing environmental carcinogenic agents down to safe levels or limiting exposure to them. Some specific cancers that are preventable and for which prevention strategies have been developed are lung, skin, bladder and oral cancers (for further information on cancer as a preventable disease, see the Prevention component of this Plan).

The effectiveness of designed prevention strategies depends heavily on knowledge and data about the public that is at risk, and interventions which have been proven effective. In many cases, prevention programs have not reached elements of the population in need; to some degree this is due to the fact that we have not adequately researched the population's needs. Massachusetts has only recently attempted to define the presence of carcinogens in the environment and to identify populations at risk (see the Prevention component for a more complete discussion of the issue).

More importantly, prevention has received less support from government than is warranted by its potential impact. This impact is quite sizable: in 1972, the total economic cost of cancer in the United States was estimated at over $17 billion.[9] This included consideration of both direct costs of providing cancer management services and the indirect costs of earnings lost through morbidity and mortality. The percentage of this total due to smoking alone has been estimated to be 20%.[10] Although funding has been available to support prevention efforts, it is possible that funds have been poorly allocated: support to programs with potentially greater impacts or to the design and implementation of more effective strategies has been slower than hoped. This may be partially due to the public political process and to the variety of funding sources for prevention programs.

Continued research into cancer causation is also necessary. For example, there is a considerable amount of epidemiological evidence that nutrition affects the risk of getting cancer, although no direct cause-effect relationship has been established. The National Cancer Institute has been expanding its research in this area.[11]

The key issues in cancer prevention thus focus on (1) assuring the appropriate level of commitment to effective prevention strategies; (2) improving statewide efforts to identify populations at risk; and (3) monitoring and evaluating the impact of programs undertaken over time.

Screening is the presumptive identification of unrecognized disease by the use of tests, examinations or other procedures.[12] Screening examines a population of apparently well people, i.e., those who do not have signs or symptoms of disease, and separates those who probably have the disease from those who probably do not. This presumptive evidence of cancer must then be confirmed or ruled out by further appropriate diagnostic procedures undertaken by a physician. Examples of cancers that are amenable to screening are cervical, breast and colorectal cancers. The purpose of screening, as well as detection, is to find and treat cancers in an early stage to improve the patient's chances for long term survival and cure. Screening programs must thus be able to link positive screened individuals into the health care system for diagnosis and treatment. The responsibility for screening usually lies with health care providers since the individual is not aware of his/her asymptomatic cancer. Screening is most often targeted at a specific high risk population rather than the population at large. Some screening techniques, as in self-administered Hemoccult tests for colorectal cancer, are being developed which rely on individual participation in supplying test materials for health provider review.

Effectiveness of screening relies heavily on knowledge of the health care provider about effective use of screening techniques and a commitment to performing them as appropriate. Efficient databases which can identify and track high risk populations for screening can also be very useful in certain circumstances. Some screening techniques such as mammography (for breast cancer) are not totally without danger and therefore must be applied wisely to groups for whom potential benefits outweigh potential risks. Costs of screening and availability of third party coverage are also important factors in its application. Some screens are not covered by insurance, or may only be covered when done in certain settings or when cancer is diagnosed as a result of the screen. Because screening would thus often involve out-of-pocket expenditures, it may not be utilized as much as it should be. This happens despite the acknowledged cost-effectiveness of certain screening[13] and detection[14] procedures. The degree to which screens are administered in Massachusetts, by whom and to whom, is not known.

Detection is defined as the application of knowledge, skills and procedures to identify signs and symptoms of disease. It is distinguished from screening in that signs and symptoms are present in the individual.[15] These signs and/or symptoms, however, may not be recognized by the individual. Even if they are, they may not be considered to be indicative of disease. Detection may thus be a function not only of how well informed and motivated individuals are, but also a function of the adequacy of the tools used to detect disease and of the motivation of health care providers and the public to initiate action. There are three possible ways that prompt detection may be accomplished:

(1) by the use of special procedures by individuals, such as breast self examination;

(2) by increasing the individual's knowledge of signs and symptoms that may indicate cancer; and

(3) by health providers applying skills and knowledge to an individual patient.

Cancers for which detection is possible in a timely way include breast, testicular and skin cancers. Detection is primarily the responsibility of the individual. Public education about signs and symptoms for which medical attention should be sought and about self examination are often the focus of detection programs. Primary care providers are also essential to detection: they can regularly perform certain detection procedures that patients may be unable to do (such as rectal examination) or may prefer not to do. They may detect certain symptoms during a physical to which the patient had paid no attention, and they can also provide important personal patient education. Communications media have also contributed strongly to the public's education about detection.

Key issues in the field of cancer detection include (1) the acceptability of certain detection techniques to the public; (2) general body awareness of individuals that permits them to perceive signs and symptoms at an early time; (3) the willingness of the individual who perceives a sign or symptom to seek immediate medical attention; and (4) the commitment of the medical profession to provide patient education about detection, to contribute time during patient visits to detection, and to follow up on signs and symptoms perceived with further diagnostic tests.[16]

The three interventions above (prevention, screening and detection) are targeted at different groups within the population and are primarily oriented to deal with site specific cancers. Groups within operating cancer management systems should help to develop priorities within the region for these programs and work together with acute care providers to evaluate the effectiveness of programs undertaken. Future revisions to this plan will deal more explicitly with particular strategies concerning specific cancers.

B. Treatment

Beginning with diagnosis, the cancer patient enters a complex acute care system for treatment. Pretreatment evaluation is an important step for the patient. This is the assessment of the balance between the aggressiveness of the disease and the level of resistance of the patient. Staging (the assessment of the anatomic extent of the cancerous process) accomplished during this period is important for two reasons: (1) in terms of the individual patient, staging will determine the choice and aggressiveness of the treatment modalities used; and (2) in terms of the health care system, knowing at what stages patients are diagnosed can assist in promoting the stated goals of detection and early treatment.

During diagnosis, pretreatment evaluation, and treatment, the cancer patient will use multiple primary, specialty and other support services which are primarily hospital-based. The cancer patient is a substantial user of diagnostic radiology, laboratory, pathology,

hematology, nuclear medicine and other services for diagnosis and pretreatment evaluation. Nutrition and psychosocial services are also strongly needed by cancer patients. One note of interest here is the apparent increasing utility of body C.T. scanners not only for diagnosis of cancer, but perhaps more importantly to support staging, pretreatment evaluation decisions and monitoring of different types of cancers. The literature[17] suggests its potential usefulness in improving the effectiveness of treatments given with hoped-for reduction of side effects and increased long term survival. Although no concrete data are currently available, it is believed that the current utilization of C.T. scans for these purposes is very limited; this may be due partially to the fact that C.T. scans are not readily accessible for these purposes. As more studies are completed, it may be appropriate to reexamine the future need for C.T. scans given their expanded utility in these new areas.

The primary clinical treatment modalities for cancer are surgery, radiation therapy and chemotherapy. These modalities may be used individually or in combination with one another at different stages of the patient's treatment. Due to the cyclical nature of cancer, with high rates of recurrence over time, cancer patients may reenter the acute care system for treatment at more than one point over time. The majority of patients will receive multi-modal acute treatment.[18] Accessibility to multiple treatment modalities is a potential issue for cancer care. In Massachusetts in 1977, only 29 acute care hospitals supplied all three major treatment modalities (c.f. Chart 10). In many instances, patients will thus need to use the resources of more than one hospital. Multi-institutional relationships which support the availability and accessibility to these multiple resources are therefore very important. These relationships particularly include the involvement of community hospitals, where much cancer treatment is given. A recent study of the inpatient use of Massachusetts hospitals by cancer patients indicates that approximately 6% of all acute care hospital discharges are cancer patients.[19] Some care, particularly radiation therapy and some chemotherapy, may be given on an outpatient basis. Approxiamtely 80% of all radiation therapy in Massachusetts is delivered on an outpatient basis.[20]

Even with the strengthening of multi-institutional relationships, the components of acute care to be delivered remain the decision of physicians. These clinical decisions are not always easy to make. The state of the art in application of different therapies is constantly changing, and physicians must be aware of current and newly tested uses of the three modalities. Specialists in chemotherapy, surgery and radiation therapy may also not always agree with each other on appropriate use of their specialty or others. The physician making the treatment decision, that physician's knowledge of the effectiveness of various modalities and professional differences of opinion about their use directly affect the treatment the cancer patient receives. Because of the very complex application of these modalities to treat specific cancers, and the concurrent need to assure quality and continuous management of the patient's care, it is essential that treatment planning, election of treatment modalities and ongoing patient management be a team effort. Multi-disciplinary case management which includes other allied health involvement such as social work,

CHART 10

SELECTED INDICATORS OF CANCER MANAGEMENT SERVICES
MASSACHUSETTS ACUTE CARE HOSPITALS 1977 AND 1978

HSA	HOSPITAL	Total Beds[1]	Cancer Discharges[2]	Cancer Discharges (% of Total)[3]	Radiation Therapy (Total Trtmnts)[4]	Surgery[5]	Chemotherapy[6]	Tumor Registry[7]
I	Berkshire Med Ctr	412	888	5.7%	8,018	Y	Y	Y
	Fairview	70	114	4.3%	0	Y	N	N
	Hillcrest	142	167	3.9%	0	Y	N	N
	North Adams	192	347	5.1%	0	Y	Y	Y
	Athol	101	127	4.8%	0	Y	N	Y
	Cooley-Dickinson	254	601	5.7%	5,095	Y	Y	Y
	Farren Memorial	102	129	5.7%	0	Y	N	Y
	Franklin County	191	281	4.2%	0	Y	Y	Y
	Baystate Med Ctr	1051	1571	5.4%	20,535	Y	Y	Y
	Holyoke	310	517	5.7%	0	Y	Y	Y
	Ludlow	102	65	2.4%	0	Y	N	Y
	Mary Lane	78	87	2.5%	0	Y	N	N
	Mercy	307	585	5.8%	0	Y	Y	Y
	Noble	172	232	4.7%	0	Y	N	Y
	Providence	247	400	4.1%	0	Y	Y	Y
	Shriner's	60	NA	NA	0	Y	N	N
	Wing Memorial	85	64	NA	0	Y	N	N
II	Burbank	244	365	4.2%	363	Y	Y	N
	Clinton	82	75	3.0%	0	Y	N	N
	Henry Heywood	153	248	4.4%	0	Y	Y	Y
	Leominster	150	220	3.3%	0	Y	Y	N
	Nashoba Community	102	140	4.1%	0	Y	N	N
	Winchendon	40	24	2.5%	0	Y	N	N
	Cutler Army	112	NA	NA	0	Y	Y	Y
	Doctor's	114	104	NA	0	Y	N	N
	Fairlawn	104	146	3.8%	0	Y	N	N
	Holden District	82	130	4.6%	0	Y	Y	N
	Memorial	371	540	3.2%	7,138	Y	Y	Y
	St. Vincent's	600	NA	NA	10,271	Y	Y	Y
	U. Mass. Med Ctr	79	143	4.8%	0	Y	Y	N
	Worcester City	365	NA	NA	5,352	Y	Y	Y
	Worcester Hahnemann	240	411	3.4%	0	Y	N	Y
	Harrington Memorial	121	219	3.8%	0	Y	Y	N
	Hubbard Regional	97	138	4.1%	0	Y	N	N
	Milford-Whitinsville	191	204	2.9%	0	Y	Y	N

CHART 10 (cont.)

HSA	HOSPITAL	Total Beds[1]	Cancer Discharges[2]	Cancer Discharges (% of Total)[3]	Radiation Therapy (Total Trtmnts)[4]	Surgery[5]	Chemotherapy[6]	Tumor Registry[7]
III	Lowell General	292	703	5.8%	6,032	Y	Y	Y
	St. John's	256	236	2.7%	0	Y	N	Y
	St. Joseph's	275	370	4.0%	0	Y	Y	Y
	Bon Secours	282	693	6.4%	8,974	Y	Y	Y
	Lawrence General	361	NA	NA	0	Y	N	Y
	Amesbury	63	71	3.0%	0	Y	Y	N
	Anna Jaques	103	188	3.5%	0	Y	N	N
	Haverhill Municipal	202	414	4.9%	0	Y	N	N
IV	Beth Israel	427	1505	10.2%	JCRT[8]	Y	Y	Y
	Boston City	468	567	3.3%	0[8]	Y	N	Y
	Boston Hosp-Women	293	621	10.4%	JCRT[8]	Y	Y	Y
	Boston V.A.	815	NA	NA	7,907	Y	Y	Y
	Brookline	84	105	4.1%	0	Y	N	N
	Carney	376	836	8.0%	0	Y	Y	Y
	Chelsea Memorial	63	NA	NA	0	Y	N	N
	Children's	343	1200	9.3%	JCRT[8]	Y	Y	Y
	Faulkner	246	579	8.7%	0	Y	N	Y
	Grover Manor	161	NA	NA	0	Y	N	N
	Hahnemann	65	72	5.4%	0	Y	Y	N
	Huntington General	80	122	6.4%	0	Y	N	Y
	J.P. Kennedy	88	4	.3%	0	Y	N	N
	L.F. Quigley	184	171	9.9%	0	Y	N	Y
	Lahey Brooks	60	401	15.8%	8,560	Y	Y	Y
	Lemuel Shattuck	195	NA	NA	1,321	Y	Y	Y
	Longwood	75	66	5.2%	0	Y	N	N
	Mass Eye & Ear	174	422	3.7%	0	Y	N	Y
	Mass General	1083	3189	10.6%	39,598	Y	Y	Y
	N.E. Baptist	245	505	7.6%	0	Y	Y	N
	N.E. Deaconess	489	1918	13.1%	JCRT[8]	Y	Y	Y
	N.E. Med Ctr	452	2352	18.0%	19,541	Y	Y	Y
	Parker Hill	93	NA	NA	0[8]	Y	N	N
	Peter Bent Brigham	332	1149	11.5%	JCRT[8]	Y	Y	Y
	Robert B. Brigham	96	9	.5%	0	Y	N	N
	Shriner's Burn	30	NA	NA	0[8]	Y	N	N
	Sidney Farber Cancer	34	926	NA	JCRT[8]	N	Y	Y
	St. Elizabeth's	406	831	6.7%	0	Y	Y	Y
	St. Margaret's	142	NA	NA	0	Y	N	Y
	U.S. Public Health	122	NA	NA	0	Y	N	Y
	University	379	1680	18.1%	9,367	Y	Y	Y
	W. Roxbury V.A.	259	NA	NA	0	Y	N	Y

CHART 10 (cont.)

HSA	HOSPITAL	Total Beds[1]	Cancer Discharges[2]	Cancer Discharges (% of Total)[3]	Radiation Therapy (Total Trtmnts)[4]	Surgery[5]	Chemotherapy[6]	Tumor Registry[7]
IV	Winthrop Community	65	104	4.2%	0	Y	Y	N
	Cambridge	190	235	3.0%	0	Y	N	Y
	Central	113	NA	NA	0	Y	N	N
	Choate	174	238	4.1%	0	Y	N	N
	Emerson	221	407	4.0%	0	Y	Y	Y
	Mt. Auburn	300	700	6.8%	1,200	Y	Y	Y
	Sancta Maria	150	416	9.5%	109	Y	Y	Y
	Somerville	133	278	5.6%	0	Y	Y	N
	Symmes	176	305	6.1%	0	Y	N	Y
	Winchester	191	490	4.8%	0	Y	Y	Y
	E.K. Shriver	16	NA	NA	0	Y	N	N
	Framingham-Union	295	694	4.3%	0	Y	Y	Y
	Glover Memorial	95	225	7.0%	0	Y	N	Y
	Leonard Morse	256	383	4.4%	0	Y	N	N
	Marlborough	135	262	5.5%	0	Y	Y	N
	Newton-Wellesley	337	694	5.8%	0	Y	Y	Y
	Waltham	307	530	4.9%	112	Y	Y	Y
	Norwood	277	448	3.6%	0	Y	Y	Y
	Pondville	104	NA	NA	10,317	Y	Y	Y
	Raymond (Wrentham)	55	NA	NA	0	N	N	N
	Milton	154	261	5.5%	0	Y	N	N
	Quincy City	367	577	4.4%	0	Y	N	N
	South Shore	238	520	3.8%	0	Y	N	Y
V	Sturdy Memorial	208	384	4.2%	0	Y	N	N
	Brockton	322	1092	9.6%	10,268	Y	Y	Y
	Cardinal Cushing	275	406	4.7%	0	Y	N	Y
	Goddard Memorial	236	509	3.8%	0	Y	Y	Y
	Jordan	135	264	4.2%	0	Y	N	N
	Morton	196	280	3.3%	102	Y	Y	N
	St. Luke's (Middl.)	66	78	3.3%	0	Y	Y	N
	St. Anne's	220	299	3.6%	0	Y	Y	N
	Union-Truesdale	489	895	5.0%	188	Y	N	N
	St. Luke's (N.B.)	446	907	4.8%	0	Y	N	Y
	Union (N.B.)	125	102	3.3%	0	Y	N	N
	Cape Cod	243	683	6.3%	0	Y	N	Y
	Falmouth	88	302	5.4%	0	Y	N	Y
	Martha's Vineyard	80	58	4.8%	0	Y	N	N
	Nantucket Cottage	50	26	2.5%	0	Y	N	N
	Tobey	89	244	12.0%	0	Y	N	N

CHART 10 (cont.)

HSA	HOSPITAL	Total Beds[1]	Cancer Discharges[2]	Cancer Discharges (% of Total)[3]	Radiation Therapy (Total Trtmnts)[4]	Surgery[5]	Chemotherapy[6]	Tumor Registry[7]
VI	Addison-Gilbert	144	224	4.3%	0	Y	N	Y
	B.S. Cable	41	105	8.7%	0	Y	Y	N
	Beverly	252	369	4.9%	113	Y	Y	Y
	J.B. Thomas	99	131	4.0%	0	Y	N	Y
	Hunt Memorial	144	216	3.9%	0	Y	N	Y
	Mary Alley	41	70	7.8%	0	Y	N	N
	N. Shore Children's	62	5	.1%	0	Y	N	N
	Salem	374	833	7.1%	9,655	Y	Y	Y
	Lynn	315	659	5.6%	7,980	Y	Y	Y
	Saugus General	109	NA	NA	0	Y	N	N
	Union (Lynn)	210	328	5.3%	0	Y	N	N
	Melrose-Wakefield	253	NA	NA	0	Y	Y	N
	N.E. Memorial	303	328	3.7%	0	Y	Y	Y
	Lawrence Memorial	195	520	NA	0	Y	Y	Y
	Malden	270	504	4.4%	0	Y	Y	N
	Whidden Memorial	176	235	4.4%	0	Y	N	N

Technical Notes for Chart 10

1. Mean total beds, FY 1977. Annual Hospital Statistical Report - 1977, MDPH

2. All discharges, including deaths, with primary diagnosis of cancer (ICDA codes 140-209 and 230-239), including transfers and multiply-admitted patients, for calendar year 1977. Regional Cancer Control Committee, Cancer Discharge Study 1979.

3. Total discharges, calendar year 1977 obtained from Mass. Hospital Assn.

4. Total number of treatments (superficial, orthovoltage, megavoltage, and brachytherapy) for FY 1978. Annual Hospital Statistical Report-1978, MDPH

5. Surgical services offered (Yes or No) for FY 1977. Section II - Discharge Analysis, Annual Hospital Statistical Report-1978, MDPH

6. Chemotherapy service offered within facility (Yes or No), FY 1977. Annual Hospital Statistical Report-1977, MDPH

7. Regional Cancer Control Committee, Registry Subcommittee, Cancer Incidence Reporting System Operations Manual 1978.

8. Joint Center for Radiation Therapy - 36,213 total treatments in FY 1978.

psychology, nutrition, occupational and physical therapy, and many other expertises ensure that adequate attention is paid to the other substantial needs of the patient. Effective multi-disciplinary team management requires decisions within provider groups and within institutional settings to manage patient care using this approach; such groups should be encouraged to develop their own guidelines on handling of the various types of cases and to provide continuing education and evaluation of care. Data are vitally needed to support development of clinical guidelines by these groups, and evaluation of care within their own system. In 1978, only 72 acute care hospitals in Massachusetts maintained cancer patients on a registry of some kind (c.f. Chart 10). Registries are necessary databases for evaluaton of patient care and monitoring and follow-up of patients. The American College of Surgeons supports the need for acute care hospitals to maintain registries, and requires maintenance of a registry with follow-up of at least 90% of patients for accreditation.[21,22] Increased technical and financial support should be provided to cancer management systems to strengthen these data bases.

One treatment modality which is currently being examined in greater depth is radiation therapy. In 1978, discussions among the Regional Cancer Control Committee, Health Systems Agencies, Massachusetts Department of Public Health and others led to a decision to undertake the development of radiation therapy standards and measures. It is believed that more than half of the current radiation therapy services as well as others will request Determination of Need for radiation therapy in the next five years. These standards and measures will be completed by 1981 and should have a strong impact on the future availability, accessibility and quality of radiation therapy services within cancer management systems.

Until this current effort in radiation therapy standards development is completed, the Massachusetts Department of Public Health should adopt as interim guidelines the Radiation Therapy Standard included in the National Guidelines for Health Planning (issued March 28, 1978). This standard sets minimum levels of utilization for new units and for existing units before additional ones become operational. The standard consists of three parts:

(1) "A megavoltage radiation therapy unit should serve a population of at least 150,000 persons and treat at least 300 cancer cases annually, within three years after initiation."

From a reading of the background material on this standard, it is apparent that "cancer cases" is synonymous with "new radiation therapy patients."

(2) "There should be no additional megavoltage units opened unless each existing megavoltage unit in the health service area(s) is performing at least 6000 treatments per year."

(3) "Adjustment downward may be justified when travel time to an alternate unit is a serious hardship due to geographic remoteness."

Sufficient data are not available to assess how megavoltage radiation therapy services in the state compare to each of the minimum levels in this standard:

(1) The size of the population served by each unit is not known. One might expect HSA IV, with its large number of units, to be below the standard (i.e., fewer than 150,000 persons per unit), but this cannot be concluded decisively because many of those units are known to have service areas extending much beyond HSA IV's boundaries.

(2) Utilization data per unit are not available for multi-unit services. However, in 1978, 8 of the 13 one-unit services did not treat at least 300 new patients; also, in 5 of the 7 multi-unit services, the average number of new patients per unit was less than 300.

(3) Similarly, in 1978, 10 of the 13 one-unit services did not provide at least 6000 treatments, and 3 of the 7 multi-unit services did not average 600 treatments per unit. As a result, HSAs I, II, III, and IV were not in compliance with this part of the standard.

(4) The issue of geographic remoteness is not considered relevant for any of the radiation therapy services in Massachusetts.

Initial efforts in radiation therapy standards development have focused on the development of the first extensive inventory of radiation therapy resources in Massachusetts,[23] and a review of the current and past utilization of these services.

Twenty-nine radiation therapy services exist in Massachusetts, all but two in hospital settings. Almost all services are located in hospitals that also perform surgery and chemotherapy. Availability does not appear to be as great an issue as in other more rural states: when construction of the new Cape Cod Hospital radiation therapy facility is completed late this year, very few residents will be more than twenty miles direct line distance from a radiation therapy resource. The issues in availability of resources will likely center around:

(1) shortages and/or maldistribution of critical manpower including radiation therapists, radiation physicists, and radiation therapy technologists; qualifications of personnel; and variations in staffing patterns;

(2) availability of treatment planning and other support equipment within radiation therapy services, and access to other support specialities such as Diagnostic Radiology and Nuclear Medicine; and

(3) potential maldistribution of radiation therapy resources related to population.

In 1978, these twenty-nine services provided 242,715 treatments to 16,559 patients, of which 11,716 were new patients.[24] These figures include total utilization of superficial, orthovoltage, megavoltage and brachytherapy services within radiation therapy: no data are available on rarely used systemic therapy. Of total treatments, 95.6% were for megavoltage therapy, the most frequently used form of therapy.[25] Almost all of these patients were cancer patients, although radiation therapy is used to a minor degree for treating certain benign lesions.

Choice of radiation therapy to treat patients depends on many factors. First is the amenability of the cancer in a given stage to treatment by radiation therapy. It may be used independently for curative or palliative purposes, or in conjunction with surgery and/or chemotherapy. Although data are not available on its role in the total treatment of Massachusetts cancer patients, data on intent of treatment indicate that approximately 55% of all megavoltage therapy patients in 1978 were treated curatively, the balance palliatively.[26]

A second factor is whether or not referral is made to radiation therapy. Many variables influence the referral, including patient preference, referring physician knowledge of the utility of radiation therapy for a particular case, the availability of and accessibility to radiation therapy services, whether team management with radiation therapy support is present in making teatment decisions, etc. The effect of these various influences on utilization is not known, but it is generally felt that these influences to some degree inhibit the effective and timely use of radiation therapy.

Initial review of data concerning radiation therapy utilization indicate the following areas at a minimum will need further discussion in Massachusetts:

(1) timely and appropriate utilization of radiation therapy within cancer managment;

(2) quality of care within radiation therapy, particularly as affected by the presence or absence of therapeutic and treatment planning equipment, staff, and multi-disciplinary team management; and

(3) methodological issues in projecting need for radiation therapy.

From the patient perspective, cancer treatment may be confusing, frightening and difficult. The treatments themselves may also cause significant morbidity through side effects, causing even greater discomfort and pain. Cancer patients and their families must also deal with fear of the disease and of death, loss of job, and loss of normal life activities. Providers of care to cancer patients must be particularly sensitive to these factors in contacts with cancer patients and assist the patient and his family in meeting their many medical, psychosocial, economic, transportation, lodging and other needs during treatment.

C. Continuing Care

Care for the cancer patient rarely ends with termination of the initial treatment phase. A variety of services may be needed by the cancer patient and his family from this point; and because of the nature of the disease process, including progression and recurrence of disease, cancer patients must continue to be closely monitored.

Continuing care refers to all forms of therapy and support given to the cancer patient after he or she has undergone a treatment regimen. However, continuing care is part of the total program of patient care and is begun at the time of diagnosis to evaluate the needs of the individual. Continuing care is coordinated with the primary treatment plan, and when this plan ends, it becomes the major form of management of the cancer patient. It may be augmented by follow-up treatment necessitated by recurrence of acute phases of the disease. It may also involve the patient and his/her family who, with adequate professional support, can share in the responsibility for care. The three major forms of continuing care are rehabilitation, maintenance and terminal care.

Rehabilitation is the process of restoring maximum physical, psychological, social and vocational functions lost as a result of the disease and/or the treatment of the disease.[27] The emphasis of rehabilitation is the improvement of the functional condition of the patient. Therapeutic techniques used in rehabilitation include physical therapy, occupational therapy, recreational therapy, prosthetic/orthotic services, communication therapy and social therapy.

Maintenance is the provision of support and services needed for those cancer patients whose condition cannot be improved.[28] It is aimed at lessening the burden of recurrent and/or disseminated disease through such services as home health care, nursing home care, family-oriented care and support groups. Its purpose is to maintain the individual with cancer at his/her existing level of function by: (1) preventing deterioration in his/her physical and mental condition through the use of all available resources; and (2) providing assistance in activities in daily living.

Terminal care refers to the management of those cancer patients in whom the disease process has been determined to be irreversible and leading to death. The needs of these patients are distinct. Of particular importance in care of terminally ill patients are relief of pain (palliation) and provision of a caring environment that includes psychological, social and religious support services for both the patient and family.

To ensure the delivery of effective continuing care services that respond to the patient and family needs, a planned approach to continuing care is essential. Continuing resource needs will vary according to individual patient condition and family status. Continuing care may involve different expertises and must therefore be planned carefully using a team approach. It is neither in the interest

of the patient nor of the provider to have continuing care perceived or accomplished as a separate component disjointed from acute care. Clear responsibility for management and follow-up on patient continuing care has historically been a weak point of cancer managment systems. Patients may be dropped by acute specialists when acute care is completed; the patient's individual physician may not have been involved in acute care or aware of current patients needs; and the patient may not reach other new continuing care resources that could help meet new patient needs. These potential problems can be greatly helped by involvement of key continuing care professionals including the individual's private physician, social workers and others in all phases of care from treatment through continuing care.

In addition, continuing care resources have been sometimes unavailable or inaccessible to patients. Support groups, transportation services and programs for the terminally ill such as hospices in particular have been unavailable to many patients; certain home care services have been inaccessible to some patient groups, largely because they have not been reimbursable by various third party coverage.

Although little is known about the current presence and use of many continuing care services for cancer patients, a summary of what little data is available follows:

- A one day census of nursing homes in Massachusetts in 1976 showed that 891 cancer patients were being cared for among the 836 nursing and rest homes reporting. These patients constituted 1.8% of the total patient population on that day.[29]

- In a survey of 179 home health agencies done in 1976, the total estimated caseload for these agencies was 80,051. Of these, 4312 were admitted with the goal of terminal care (many of these patients would be cancer patients); and 11,555 (or 14.4%) were admitted with a diagnosis of cancer.[30]

- In July 1979, an estimated sixty-four support group services were available to serve cancer patients within Massachusetts. The number of cancer patients currently served by these groups is not known.[31]

- 145 transportation services currently provide some degree of services for cancer patients. The availability of these services within HSAs ranges from 11 to 49. These services vary in cost, patient capacity, range, ability to handle disabled patients, and specific types of patients covered.[32]

- The Regional Cancer Control Committee estimates that there are currently ten hospice-like programs operating in Massachusetts, and at least another ten in the planning stages. The current number of patients served by those operating programs is not known.

As discussed in the Long Term Care Component, the development of hospices in Massachusetts has been a specific planning and policy development issue in continuing care at both the national and local level. The national hospice movement has had strong "grass roots" support; in Massachusetts, hospice organizations have also begun with impetus from consumers who are interested in improving the quality of terminal cancer patients' lives and securing more comfortable environments for death than hospitals. 75% of all cancer deaths in Massachusetts occurred in hospitals in 1976.[33] Many of the new and planned hospice-type programs in Massachusetts have thus focused on a home care approach.

Two recent developments in Massachusetts have helped to support the growth of hospices with consistently high quality programs. First, the Regional Cancer Control Committee, through a subcommittee representing a wide range of expertise, completed a position paper on hospice philosophy and programming.[34] Second, the Massachusetts Department of Public Health adopted a preliminary policy statement on hospice. This statement discusses the principles behind the hospice concept, and provides direction for the development of hospice programs. It is the aim of the Department to allow a period during which information about pilot hospice care programs can be gathered prior to formulating more definitive policies. Issues that will be examined include the role of existing health care providers, the integration of hospice services within the total health care system, financing and reimbursement, and the training and education of providers, patients, and families.

D. Financial Issues

All six of the interventions within cancer management are impacted upon by financial considerations. These considerations include third-party reimbursement of specific cancer services, the cost-effectiveness of alternative services and programs, and the need to address all of the costs involved in cancer (i.e., direct and indirect economic costs, and intangible costs).

Third-party reimbursement is of particular importance because it can hinder accessibility of cancer management services. For example, limited or nonexistent third-party coverage in such areas as continuing care services, outpatient chemotherapy, and screening procedures means that many people needing these services won't get them.

Massachusetts began its examination of the financing of cancer services in a study of the sale of cancer-only insurance done by the Massachusetts Division of Insurance in 1979.[35] The study found that marketing of cancer insurance exploits the public's fear of cancer by often using American Cancer Society statistics as a fear tactic. These insurance policies provide inadequate protection against the total cost of the disease, duplicate benefits that many persons already have through regular health insurance programs, and limit benefits by unusually restrictive waiting periods and the restriction of benefits to "definitive cancer treatment." This study resulted in Massachusetts administratively banning the sale of cancer insurance and

formed the basis for a recent Select Committee on Aging report.[36]

While other forms of health insurance are not exploitive in nature, questions concerning benefits and coverage remain. In future revisions of the State Health Plan, issues in the reimbursement of cancer services, together with the other financial considerations mentioned above, will be more fully discussed.

E. Cancer Control Issues

While the discussion in previous sections has concentrated on progress and issues which affect primarily the development and operation of cancer management systems, a few additional points concerning other cancer control issues of statewide relevance merit discussion.

Cancer management systems, discussed earlier, are the proactive arm of cancer control. Cancer centers function within cancer management systems as providers of care, but they also have unique roles that support the development and operation of cancer management systems in other ways. These centers specialize in:

(1) identifying, field testing and evaluating new technology in cancer prevention, treatment and continuing care;

(2) transferring new and existing cancer research results that can be applied in both public policy decisions and cancer management systems;

(3) training of new cancer manpower (research, clinical and technical), educating medical students, and providing continuing education to professionals caring for cancer patients or active in prevention; and

(4) providing technical expertise in epidemiology, planning, public information and education, prevention and screening program development, etc.

The combination of these resources and their contributions with effective cancer management systems results in a total cancer control system. A cancer control system is a working model of institutional, organizational and professional working relationships providing and promoting resources to increase the body of knowledge about and the manpower pool for cancer control; it also effectively matches those resources with operating cancer management systems to ensure application of appropriate technologies to a given population.

Massachusetts benefits from the presence of several specialized cancer control resources which supply these needed contributions. Two functions of particular concern in cancer planning are the application of new technology in cancer management systems and manpower planning.

Cancer centers, in addition to serving as primary care providers within their own region, also serve an important support role to operating cancer management systems in communicating new technology to the field. Centers play a strong role through affiliations with other hospitals in continuing education of providers, in new applications of technology, and in supporting the improvements of local capabilities to perform new techniques. Where certain treatment must remain performed in centers because of its complexity, centers make such tertiary care accessible to patients from the regional systems. It is important that regional cancer management systems have linkages with cancer centers to ensure the availability and accessibility to these support functions. Regional cancer management system support is also needed by the centers to support clinical research and appropriate patients for clinical trials. As guidelines for the development and improvement of regional cancer management systems are developed, these critical linkages with cancer centers and definition of appropriate support roles of the centers should be considered. Policy development for cancer control and cancer management services and needs should include consideration for the unique role of these cancer centers.

A second issue of critical importance to cancer management systems is manpower. Of particular note are manpower shortages in radiation therapy and continuing education needs of physicians and other members of the cancer management team. As Massachusetts devotes considerable effort in the next five years to strengthening the statewide cancer control system, attention should also be given to manpower training (generalist and specialist) and continuing education needs consistent with new policy developed. Once optimal resources for cancer management are defined and we can better predict the need for these resources, planners and providers will need to examine what the future manpower training and continuing education needs will be and what strategies can be developed to provide an adequate supply of manpower with access to appropriate continuing education.

The intent of this first Massachusetts cancer control plan has been to describe the scope and function of cancer management and cancer control, describe need and delineate some of the major issues. This narrative and the goals, objectives and recommended actions that follow provide direction for beginning to address major issues. It is hoped that future revisions to this plan can expand on points only mentioned and refine directions for statewide cancer control as new initiatives are undertaken at the regional and local level.

IV. BREAST CANCER

A. Breast Cancer as a Priority

In addition to planning for improved cancer management and cancer control systems delivery, it is also appropriate and important for planning to address site-specific cancers. The many distinct diseases that collectively are called "cancer" may affect different groups within the population, and are amenable to control through different interventions. Strategies to reduce the impact of a specific cancer on the population must therefore be dealt with individually. Planning issues and recommendations for site-specific cancers should be developed within a total cancer systems planning effort; also, they may serve to illustrate the generic systems issues while providing direction concerning a specific disease. This and future cancer control plans will incorporate site-specific issues and planning recommendations where appropriate within general cancer control systems discussions.

Breast cancer has been chosen as the first site-specific cancer to address in detail. Although breast cancer can not be prevented, long term symptom-free survival is possible with effective screening, detection, diagnosis, treatment and continuing care interventions. The care and treatment of breast cancer patients lends itself to multi-disciplinary care. The majority of patients are treated in community hospitals with occasional referral to tertiary centers. Among women in Massachusetts, breast cancer accounts for more deaths and more new cases each year than any other cancer. Lastly, five of the six Health Systems Agencies in Massachusetts deal specifically with breast cancer issues in their Health Systems Plans. Several HSAs (I,II,VI) point out the problem of breast cancer mortality within their regions; many (II,III,V,VI) assign high priority to health education, screening and/or detection services for breast cancer and discuss issues such as appropriate access to and targeting of screening and detection programs; two HSAs (II,VI) also set treatment of breast cancer as a priority for the future.

B. Breast Cancer, the Disease

Breast cancer is a slow growing malignant tumor which may spread to regional lymph nodes and eventually to many other sites within the body. Its cause is unknown, although genetic, viral and endocrine factors may contribute. It is primarily a disease of adult women: in 1977, men accounted for only 1% of the estimated breast cancer incidence in Massachusetts,[37] and there are no estimated new cases for women under 20 years old.[38] It is also a disease that affects white females more than non-white females. The incidence rate for white females is much higher than for non-white females (73.3 vs. 53.7 per 100,000 women nationally in 1969-71)[39], but the rate for non-white women has been increasing at a much faster pace. Despite the gap in incidence, the differential in mortality between these two groups is small, due to the poorer survival from breast cancer among black females compared to white females.[40] Lastly, the likelihood of developing breast cancer increases with age. This is illustrated for Massachusetts in Chart 11.

Risk factors associated with incidence of breast cancer include[41]:

(1) a history of breast cancer among blood relatives (male or female);

(2) women with two or fewer pregnancies; and late age at first birth;

(3) women who menarche began early and whose menopause occurs late;

(4) women who have already had breast cancer;

(5) patients who have biopsy-proven benign breast disease, particularly dysplastic lesions.

The natural history of breast cancer as a disease may be quite prolonged. Although the disease may be, and often is, lethal, long-term survival rates may be very favorable if the disease is diagnosed early and appropriately treated. It is estimated that over 80% of patients with stage I localized disease who are appropriately treated will suffer no local recurrence or distant metastases. If the disease has metastasized to the lymph nodes at time of treatment, however, the likelihood of eventual recurrence or metastatic disease in these patients is 60-70%.[42]

C. Breast Cancer in Massachusetts

Breast cancer has a profound impact on the health status of women in Massachusetts, both in terms of the number who develop it each year and the number who die from it. In 1977, for example, it was responsible for 1,162 deaths[43] or over 20% of the total 5,652 female cancer deaths in the state.[43] Also in 1977, there were an estimated 3,278 newly diagnosed cases among Massachusetts women (25.9% of the total estimated female cancer incidence of 12,726).[44] The impact on men is small by comparison: only 6 deaths and an estimated 33 new cases in 1977. For this reason, cancer as discussed here refers to female breast cancer.

In the health status section of this cancer control component, the impact of breast cancer on the female populaton of Massacusetts was discussed by observing the trends in mortality from 1969-1977. It was noted that the mortality rate for breast cancer was decreasing in women aged 15-44 but was increasing in the age-group 65 and above, which already has the highest mortality rate. HSA-specific mortality trends by age-groups were discussed.

The number of new cases (incidence) of female breast cancer is estimated in Chart 11 for each of the HSAs, and the incidence rate is given for the entire state.[45] Based on these data, each of the HSAs can expect a certain number of cases to be diagnosed each year, with the highest number occurring in the 45-64 age group. The incidence rates show that the likelihood of developing breast cancer increases with age.

Chart 11

Female Breast Cancer:
Estimated Number of New Cases by Age Group and HSA
Massachusetts 1977

	I	II	III	IV	V	VI	Mass.	Mass. Incidence Rate per 100,000 Females
0-14	0	0	0	0	0	0	0	0
15-44	52	41	30	148	60	39	370	26.5
45-64	217	178	119	561	265	177	1517	232.4
65+	195	156	110	521	248	161	1391	332.8
all ages	464	375	259	1230	573	377	3278	101.6

The percentage of patients with breast cancer surviving ten years or more has shown a slight improvement since the 1950s. Black women still have a much lower relative ten-year survival rate than white women, 41% as opposed to 51%.[46]

D. Health Systems Interventions

Although overall national rates for incidence and deaths due to breast cancer have not changed in the last thirty years, health systems interventions have been useful in securing longer disease-free states and lengthening survival for selected groups of breast cancer patients. The following sections provide a discussion of useful interventions for breast cancer, identification of priority issues, and presentation of data where available. Much of the data presented in this section was made available by the New England Breast Network Demonstration Project (NEBNDP), one of twelve such networks funded by the National Cancer Institute across the country. Twelve hospitals (ten in Massachusetts, and two in Maine) were participating in this project during the time period for which data are presented.

The etiology of breast cancer is unknown. Most of the risk factors mentioned above are related to genetic predisposition and other individual characteristics over which an individual has no control. Further epidemiological studies, however, may increase our knowledge about the potential link of nutrition (in particular, meat consumption),[47] viruses,[48] and hormones as etiologic factors in the development of breast cancer. While prevention of breast cancer is currently not considered possible, continued research may uncover stronger relationships of these potential risk factors to breast cancer.

The goal of screening for breast cancer is to detect and treat preclinical lesions (tumors too small to be felt) when effective treatment can help. Discovering the disease at an early stage has been shown to reduce death rates by 40% in women over 50.[49,50] Present screening methods include mammography (both film mammography and xeromammography) and thermography. Mammography is the only method for discovering non-palpable cancer.[51] Thermography has some value as an

extension of the physical examination and may suggest which patients should have mammography particularly in the absence of any physical findings; but it is not considered a useful screening technique.[52]

Mammography has been criticized because of the exposure to radiation that is involved in the procedure. It has been shown that radiation does increase the risk of breast cancer[53,54], and these carcinogenic effects are age- and dose-dependent. Although the radiation dose is continually being lowered, this risk must be carefully considered in determining that population of women to whom screening by mammography should be applied.[55] Proper administration of mammography using appropriate and closely monitored equipment, with proper staffing, are potential issues which merit further consideration. In a 1975 survey of hospitals and radiologists done by the Division of Radiation Control, Massachusetts Department of Public Health, it was found that almost one half of the film mammography units were not specifically designed for mammography, i.e., they were general purpose X-ray machines temporarily modified for mammography.[56] Some studies have also shown wide variation in the radiation dosage from mammography units.[57] Regional cancer management systems groups should encourage the proper maintenance of this equipment to ensure accurate dose and limited exposure to health workers, and effective targeting of groups to receive mammography. The Division of Radiation Control, pending completion of a quality assurance survey now underway, should also consider possible roles it may play in ensuring that mammography is appropriately delivered.

Only 3% of the breast cancer patients followed in the New England Breast Network Demonstration Project were detected with mammography as a screening procedure.[58] This appears to be a very low figure when compared with other national studies[59] and may indicate that mammography may not be effectively used as a screening procedure in Massachusetts.

Mammography screening is performed by many private and public organizations and providers. As shown in Chart 14, there were 37,676 mammograms performed in Massachusetts hospitals in 1977.[60] These include mammograms done for screening and as a diagnostic procedure; the relative proportions of each are not known. Of the 186 hospitals reporting, 99 performed mammography during 1977, with a range of 1 to 2,956 per hospital. Almost all mammography done in hospitals is done in acute care hospitals. Data are not available on mammograms performed in other settings.

Detection of breast cancer at an early stage is possible and can be done by the individual. The primary method for detecting breast cancer is physical examination of the breast. When done by the individual, this is known as BSE, or breast self-examination. Approximately 75% of breast cancers are detected by women themselves, either inadvertantly or through regular practice of BSE.[61] Physical examination of the breast can discover palpable lesions which may be malignant. By the time breast cancer is palpable (i.e., at a size of 1 cm), the cancer may already be eight to ten years old and have gone through thirty doublings of size. There has been debate about the effectiveness of BSE as a

detection method because by the time a lump is detected by BSE, the stage of disease may be advanced and the prognosis for long term survival poorer. A recent study in Vermont, however, found that patients who performed BSE "presented for treatment with smaller tumors and at more favorable clinical and pathological stages of disease" and concluded that "BSE was responsible for increasing the number of patients treated before metastasis of their cancer".[62] Even if some remain skeptical of the merits of BSE, the practice of physical examination of the breast should be encouraged among both women and physicians. "In the absence of a reliable and safe screening method, BSE and careful physical examination of the breast by the physician remain essential ingredients in the early detection of cancer."[63]

Even though BSE is a safe, easy and useful technique for which women can take responsibility themselves, many do not practice BSE on a regular basis. Reasons for this include lack of knowledge about the importance of BSE; fear and anxiety about detection; lack of confidence in their ability to perform the technique; and avoidance response.[64] Primary care providers can help this situation through willing instruction and support for patient self-examination.

Once a breast cancer is detected, it is critical that the patient seek medical attention for further diagnostic workup. This is particularly true for the patient who detects the lump herself. Some women delay consultation probably because of fear. Data from the New England Breast Network Demonstration Project indicate that 50% of the patients delayed over one month: of this group, 25% waited over four months, and 10% waited more than one year.[65] Although it is not clear how much delay affects survival, it is recommended that medical attention be sought immediately. Monitoring delays in seeking medical treatment could provide information to focus medical and public education efforts on this problem.

Nationally, data show that increasing numbers of patients have been diagnosed at earlier stages of breast cancer. In 1950-53, 40% of patients were diagnosed with localized disease; by 1970-73, this had increased to 47%.[66] In spite of this general improvement, however, black women and women over 60 continue to be diagnosed at later stages of disease relative to all patients. In 1970-73, the percent of black patients diagnosed with distant metastases was almost twice that of white patients[67], and over 72% of stage IV cancers in the New England Breast Network Demonstration Project were in women over 60.[68]

Biopsy and pathologic confirmation of the diagnosis is essential. There has been a gradual departure in medical practice from performing biopsy and mastectomy under the same anesthesia. In some cases when this has been done, radical surgery has been performed on women with benign or relatively benign forms of breast cancer without adequate confirmaton of diagnosis.[69,70,71] "Instead, many women today insist upon a delay between diagnosis and definitive therapy...because they no longer wish to be anesthetized without knowing exactly what will be done... This delay is not an unreasonable request, and there are no data which indicate that a delay of up to three or four weeks between biopsy and definitive therapy adversely effects survival. In fact, the temporal separation of diagnosis from treatment allows more accurate

staging of disease and is probably less expensive as well as less emotionally devastating. In this manner, only women with known carcinoma need undergo further workup...and many biopsies may even be performed on an outpatient basis, using local anesthesia".[72] Others have supported the performance of biopsies on an outpatient basis for properly selected breast patients[73,74] and feel that it also strengthens quality decision making by allowing time for second opinions including pathology review.[75,76,77]

Pretreatment evaluation of all breast cancer patients is an important step in designing appropriate treatment strategies for individual patients: its purpose is to rule out the presence of metastases and disease in the other breast. Adequate pretreatment evaluation is not always obtained as noted in the New England Breast Network Demonstration Project, which revealed wide variation in the number and kind of procedures done and a low compliance with the guidelines for such evaluation within the Network (see Chart 12).[78] Chart 12 also shows that the recommended tests, when done, contributed substantial information to pretreatment evaluation. Noncompliance with established guidelines was therefore important.

Chart 12

Breast Cancer
Pretreatment Evaluation Workups
New England Breast Network Demonstration Project
1975-1976

Recommended Test	% Cases Where Test NOT done	Findings of Those Tests DONE
ipsilateral mammography	37%	15% negative
chest X-ray	5%	5% positive
contralateral mammography	43%	4% positive
bone scan	53%	16% positive
metastatic series (skull, spine, etc.)	57%	1% positive

Treatment of breast cancer is psychologically traumatic for the patient. Providers must respond to the psychological needs of the patient and be sensitive to this issue while providing adequate information on the disease and treatment options. Patients should also be consulted before treatment decisions are made and have equal access to information about treatment options. A recently passed Massachusetts law, Chapter 214 of the Acts of 1979 (effective August 21, 1979) states:

> "every patient or resident of a facility shall be provided by the physician in the facility the right...in the case of a paient suffering from any form of breast cancer; to complete information on all alternative treatments which are medically viable."

To confirm the definition of what medically viable and preferable treatment options exist, local medical groups can develop their own clinical guidelines and share them with the hospital medical staffs; these guidelines could then be expressed in lay terms and communicated to each breast cancer patient. By separating diagnosis and treatment into two steps as recommended above, patients would have more time to fully discuss treatment options with the physician coordinating treatment, obtain another opinion if desired, and participate in choice of treatment.

All three treatment modalities for cancer management (surgery, chemotherapy and radiation therapy) are being used in the treatment of breast cancer to some degree. Optimal forms of treatment depend on the type and stage of disease and are the subject of much controversy. National data on trends in treating breast cancer are shown in Chart 13.[79]

Chart 13

Breast Cancer
Treatment Distribution
United States 1950-4, 1970-3

Type Treatment	1950-54	1970-73
Surgery only	67%	57%
Radiation Therapy only	4%	2%
Surgery and Radiation Therapy	19%	30%
Chemotherapy only	2%	2%
Surgery and Chemotherapy	1%	2%
Radiation Therapy & Chemotherapy	1%	2%
Surgery, Radiation Therapy and Chemotherapy	1%	3%
No Definitive Therapy	5%	2%

As can be seen from Chart 13, surgery alone remains the most common form of treatment for breast cancer. There has been a recent trend away from use of surgery only; and toward surgical procedures that are less mutilating.[80] The total mastectomy with axillary dissection (modified radical mastectomy) appears to be the procedure of choice at the present time for stage I and II disease (i.e., potentially curable breast cancer).[81,82] Data from the New England Breast Network Demonstration Project show no relationship between the type of primary surgery given and such medical indications as stage of disease, age of patient and histologic type. This study seems to indicate that the main determinant for the type of surgery is the hospital in which the surgery takes place, i.e., the preference of the surgeon.[83] For each of the twelve hospitals participating in the Project in 1975-1976, the percentage of breast cancer surgeries that were radical mastectomies varied from 0% to 58%, with the average being 25%.[84] More updated information on surgical patterns of practice within Massachusetts is not available.

Chart 14 shows the numbers of mastectomies (radical, modified radical, and simple) performed within acute care hospitals in Massachusetts in FY 1977. In total, 2,892 mastectomies were

CHART 14

SELECTED INDICATORS OF HOSPITAL UTILIZATION FOR BREAST CANCER
MASSACHUSETTS ACUTE CARE HOSPITALS 1977

HSA	Hospital	Mammography[1] Procedures - FY 1977	Complete[2] Mastectomies - FY 1977	Breast Cancer[3] Discharges - 1977	Breast Cancer Patient[4] Days - 1977	Average Length of Stay[5] 1977
I	Berkshire Med Ctr	416	11	62	642	10.4
	Fairview	69	7	10	126	12.6
	Hillcrest	38	8	17	218	12.8
	North Adams	420	19	42	461	11.0
	Athol	NA	6	12	167	13.9
	Cooley-Dickinson	548	18	93	1041	11.2
	Farren Memorial	313	9	13	106	8.2
	Franklin County	NA	22	31	305	9.8
	Baystate Med Ctr	911	123	234	2754	11.8
	Holyoke	556	26	45	530	11.8
	Ludlow	0	6	6	55	9.2
	Mary Lane	0	7	17	142	8.4
	Mercy	238	33	38	356	9.4
	Noble	160	20	27	288	10.7
	Providence	651	32	52	741	14.3
	Shriner's	0	0	NA	NA	NA
	Wing Memorial	53	1	4	NA	NA
II	Burbank	37	25	31	246	7.9
	Clinton	8	3	6	80	13.3
	Henry Heywood	146	4	27	275	10.2
	Leominster	199	19	29	445	15.3
	Nashoba Community	174	11	22	184	8.4
	Winchendon	NA	1	1	9	9.0
	Cutler Army	0	1	NA	NA	NA
	Doctor's	0	4	10	104	10.4
	Fairlawn	53	10	15	103	6.9
	Holden District	69	8	17	256	15.1
	Memorial	538	67	72	843	11.7
	St. Vincent's	657	78	NA	NA	NA
	U. Mass. Med Ctr	42	5	10	131	13.1
	Worcester City	212	25	NA	NA	NA
	Worcester Hahnemann	250	7	39	424	10.9
	Harrington Memorial	153	17	22	350	15.9
	Hubbard Regional	33	7	12	102	8.5
	Milford-Whitinsville	NA	12	25	313	12.5

CHART 14 (cont.)

HSA	Hospital	Mammography Procedures - FY 1977	Complete Mastectomies - FY 1977	Breast Cancer Discharges - 1977	Breast Cancer Patient Days - 1977	Average Length of Stay - 1977
III	Lowell General	105	34	117	1834	15.7
	St. John's	252	19	26	538	20.7
	St. Joseph's	209	22	54	706	13.1
	Bon Secours	360	41	91	1638	18.0
	Lawrence General	257	34	NA	NA	NA
	Amesbury	17	4	8	74	9.3
	Anna Jaques	149	14	25	207	8.3
	Haverhill Municipal	449	36	57	507	8.9
IV	Beth Israel	224	55	186	1501	8.1
	Boston City	0	16	42	610	14.5
	Boston Hosp for Women	1020	44	106	647	6.1
	Boston V.A.	0	0	NA	NA	NA
	Brookline	20	18	15	204	13.6
	Carney	360	51	77	1046	13.6
	Chelsea Memorial[6]	0	2	NA	NA	NA
	Children's	0	1	0	0	0.0
	Faulkner	2341	39	76	1417	18.6
	Grover Manor	0	4	NA	NA	NA
	Hahnemann	8	4	9	98	10.9
	Huntington General	13	0	7	84	12.0
	J.P. Kennedy	0	0	1	6	6.0
	L.F. Quigley	0	0	0	0	0.0
	Lahey Brooks	0	24	50	508	10.2
	Lemuel Shattuck	53	4	NA	NA	NA
	Longwood	5	6	8	120	15.0
	Mass Eye & Ear	0	0	2	NA	NA
	Mass General	2956	130	373	4261	11.4
	N.E. Deaconess	425	81	172	2240	13.0
	N.E. Med Ctr	517	32	125	1633	13.1
	Parker Hill	11	4	NA	NA	NA
	Peter Bent Brigham	579	72	170	1603	9.4
	Robert Bent Brigham	0	0	1	22	22.0
	Sidney Farber Cancer	88	0	NA	NA	NA
	Shriner's Burn	0	0	NA	NA	NA
	St. Elizabeth's	249	47	103	1440	14.0
	St. Margaret's	374	17	NA	NA	NA
	U.S. Public Health	317	7	NA	NA	NA
	University	0	19	271	3655	13.5
	W. Roxbury V.A.	0	1	NA	NA	NA
	Winthrop Community	0	4	7	83	11.9
	Cambridge	139	10	23	276	12.0
	Central	0	0	NA	NA	NA
	Choate	221	16	25	324	13.0

CHART 14 (cont.)

HSA	Hospital	Mammography Procedures - FY 1977	Complete Mastectomies - FY 1977	Breast Cancer Discharges - 1977	Breast Cancer Patient Days - 1977	Average Length of Stay - 1977
IV	Emerson	824	36	36	314	8.7
	Mt. Auburn	607	30	93	1074	11.5
	Sancta Maria	52	35	62	776	12.5
	Somerville	228	19	31	436	13.7
	Symmes	541	38	33	299	9.1
	Winchester	764	40	40	480	12.0
	E.K. Shriver	0	0	NA	NA	NA
	Framingham-Union	213	45	69	845	12.2
	Glover Memorial	216	26	37	385	7.7
	Leonard Morse	224	-1	50	822	16.4
	Marlborough	239	24	33	336	10.2
	Newton-Wellesley	586	58	71	877	12.4
	Waltham	678	32	60	693	11.6
	Norwood	585	45	47	461	9.8
	Pondville	578	20	NA	NA	NA
	Raymond (Wrentham)	NA	0	NA	NA	NA
	Milton	304	25	39	464	11.9
	Quincy City	369	30	70	895	12.8
	South Shore	NA	41	61	536	8.8
	N.E. Baptist	168	37	39	435	11.2
V	Sturdy Memorial	400	38	47	395	8.4
	Brockton	695	23	199	2757	13.9
	Cardinal Cushing	422	23	29	345	11.9
	Goddard Memorial	185	33	59	682	11.6
	Jordan	367	19	20	172	8.6
	Morton	254	32	37	338	9.1
	St. Luke's (Middleboro)	0	4	6	64	10.7
	St. Anne's	278	20	22	371	16.9
	Union-Truesdale	268	41	93	1022	11.0
	St. Luke's (N.B.)	610	63	125	1642	13.1
	Union (N.B.)	30	4	6	52	8.7
	Cape Cod	603	45	86	817	9.5
	Falmouth	28	0	31	239	7.7
	Martha's Vineyard	40	6	7	76	10.9
	Nantucket Cottage	0	1	3	73	24.3
	Tobey	54	8	19	211	11.1
VI	Addison-Gilbert	306	17	49	605	12.3
	B.S. Cable	0	4	28	298	10.6
	Beverly	484	19	43	555	12.9
	J.B. Thomas	0	7	14	201	14 4
	Hunt Memorial	278	22	44	787	17 9

CHART 14 (cont.)

HSA	Hospital	Mammography Procedures - FY 1977	Complete Mastectomies - FY 1977	Breast Cancer Discharges - 1977	Breast Cancer Patient Days - 1977	Average Length of Stay - 1977
VI	Mary A. Alley	0	5	8	56	7.0
	N. Shore Children's	0	0	0	0	0.0
	Salem	623	42	69	956	13.9
	Lynn	449	40	89	1318	14.8
	Saugus General[7]	18	7	NA	NA	NA
	Union (Lynn)	482	25	31	383	12.4
	Melrose-Wakefield	323	46	NA	NA	NA
	N.E. Memorial	276	33	40	597	14.9
	Lawrence Memorial	635	40	61	798	13.1
	Malden	416	29	57	624	10.9
	Whidden Memorial	307	15	19	338	17.8
	Other (non-acute care hospitals)	7	1			
	TOTAL	34676	2892			

Technical Notes for Chart 14

1. For fiscal year 1977, as reported in the Annual Hospital Statistical Report - 1977. Where the number of procedures reported was 0, further investigation is being made.

2. Complete or radical mastectomies, ICDA-8 codes 65.3 to 65.6, for FY 1977. Annual Hospital Statistical Report - 1977 (MDPH)

3. All discharges, including deaths, for breast cancer (ICDA-8 code 174) in calendar year 1977. These include transfers and multiply-admitted patients, and are for both sexes. Regional Cancer Control Committee, Cancer Discharge Study 1979.

4. All patient days for breast cancer discharges, calendar year 1977. Regional Cancer Control Committee, Cancer Discharge Study 1979.

5. Average length of stay was determined by dividing the number of patient days by the number of discharges for breast cancer.

6. Chelsea Memorial Hospital has since closed.

7. Saugus General Hospital has since closed.

performed at 115 different acute care hospitals and one psychiatric hospital. The number of these surgeries done at each hospital ranged from 1 to 130. At several hospitals a relatively small number of mastectomies were performed: at seven hospitals only one mastectomy was done, while for 36 hospitals, there were fewer than 10 mastectomies. Chart 14 also shows the number of breast cancer discharges and patient days, with average length of stay, in Massachusetts acute care hospitals during calendar year 1977. Although the slight time differences in the reporting period do not permit accurate comparison of discharges to mastectomies performed, different patterns seem to exist between institutions that warrant further investigation. The average length of stay at each hospital ranged from 6.1 to 24.3 days, with the overall average for the state being 12.1 days.

Next to surgery alone, surgery with adjunctive radiation therapy is the most common form of treatment. Data from the New England Breast Network Demonstration Project show that almost no patients in 1975-76 were treated with lumpectomy (excision of a cyst or lesion from the breast) and radiation therapy, even though this treatment may be comparable to radical or modified radical mastectomies for certain stages of breast cancer.[85] In addition, simple mastectomy with radiation therapy has shown equivalent survival rates to radical mastectomy, but is still very controversial. Regarding costs, several European clinical trials have shown that "length of stay, convalescence, time with unhealed wounds, and expense were considerably greater with radical mastectomies".[86] Although these results may not be very applicable to the United States, they do point out the need to expand consideration of the costs of treatment alternatives in the future.

Other treatment choices, including combined therapies and use of chemotherapy as adjuvant therapy and for recurrent disease are being used: determination of their long-term effectiveness awaits the results of ongoing clinical trials.

Breast cancer is one of the cancers where multiple treatment options exist, and differences of opinion about their treatment occur. Breast cancer from diagnosis through continuing care deserves a multi-disciplinary approach. The development of clinical guidelines for breast cancer at the local and regional level becomes increasingly important as it becomes clear that patients want to be more aware of treatment options and assured that treatments given cause as little mutilation as possible without a negative impact on survival. Cost-effective use of resources may also be an issue. Psychosocial needs of the breast cancer patient should be addressed from diagnosis through discharge.

The key issues in treatment of breast cancer thus center around:

(1) confirmation of the diagnosis and adequate pretreatment evaluation before treatment, especially surgery, is undertaken;

(2) multi-disciplinary management in the design and performance of all phases of treatment;

(3) cost-effective use of surgery which minimizes patient morbidity while not reducing survival;

(4) greater involvement of the patient in planning treatment; and equal access to medically viable treatments.

All breast cancer patients need continuing care services including physical and psychosocial interventions. The first need is assistance in coping with the illness during and beyond the initial diagnosis and treatment period. Problems that must be faced include those associated with complications of therapy and physical rehabilitation; financial and transportation needs; and changing body image that can affect sexual, family and social roles.[87] The breast cancer patient's family may also need support in dealing with their own anxieties. All breast cancer patients must continue to be closely monitored after recovery, with regular checkups to watch for possible recurrence of disease. Locally developed clinical guidelines for breast cancer should also include recommendations for scheduling and content of follow-up to monitor these patients. The family physician, social worker, nurse, psychiatrist and other community resources such as Reach to Recovery or other lay support groups can help meet these needs. It is felt that many breast cancer patients receive inadequate continuing care services: this may have to do with lack of involvement of particular professionals in breast cancer care, unavailability or inaccessibility of resources, rejection by the patient, or establishment of continuing care as a priority by professionals caring for the patient. A survey of a sample of breast cancer patients followed by the New England Breast Network Demonstration Project in 1975-76 shows the following referral patterns for formal continuing care services:[88]

Chart 15

FEMALE BREAST CANCER
Percent of Patients Referred to
Continuing Care Services
New England Breast Network Demonstration Project
1975-76

Type of Service	% of Patients Referred
Social Service	8%
Reach to Recovery/VNA	28%
Vocational Counseling/Rehab.	1%
Psychological Counseling	2%
Prosthesis Prescribed	22%
Physical Therapy	7%

It is the responsibility of the team managing care to ensure that adequate continuing care services are made available to the patient. Discharge plans for hospitalized patients should include an initial formal continuing care plan at a minimum.

E. Summary

This section of the Cancer Control Component dealing with breast cancer has presented specific issues relevant to improved control of this disease. It is also illustrative of many of the generic cancer control systems issues discussed in other sections, particularly:

(1) availability and accessibility of cancer management services to cancer patients and the public at risk; and the rights of cancer patients to be informed about treatment and to participate in decisions about care;

(2) the need to appropriately target and apply screening and detection programs to populations most in need; and to bring persons with suspected malignancies to medical attention for diagnosis and treatment;

(3) the importance of multi-disciplinary team approach in cancer management;

(4) the importance of designing clinical guidelines or standards for care at the local level, and evaluation of medical care which can support further improvements;

(5) the need to ensure strong continuity of care for cancer patients, and full attention to their psychosocial needs; and

(6) the importance of databases that can support problem identification, changes in the health care system, and evaluation.

The cancer patient can benefit greatly from cooperation between providers through organized regional cancer management systems and the support of public health and other cancer control expertises to systems development.

V. GOALS, OBJECTIVES AND RECOMMENDED ACTIONS

GOAL I: CANCER CONTROL RESOURCES SHOULD BE ORGANIZED AND ACT TOGETHER AS A TOTAL SYSTEM TO DELIVER ALL NEEDED SERVICES TO GIVEN POPULATIONS.

Objective 1: Optimal roles of the various organizations and institutions providing services to a given population will be defined by 1982.

Recommended Action 1: The Massachusetts Department of Public Health will cooperate with Health Systems Agencies, the Regional Cancer Control Committee and others in developing position papers.

Objective 2: Models for regional cancer management systems should be developed by 1983.

Recommended Action 1: The Massachusetts Department of Public Health will cooperate with Health Systems Agencies, the Regional Cancer Control Committee and others in developing such models for consideration.

Objective 3: Operating cancer management systems throughout Massachusetts should be implemented by 1985.

Recommended Action 1: Health Systems Agencies should develop recommendations for development or improvement of cancer management systems within their own regions by 1984.

Objective 4: Future cancer control and cancer management planning efforts should where possible use population-based approaches by 1985.

GOAL II: EFFECTIVE CANCER CONTROL INTERVENTIONS SHOULD BE AVAILABLE TO ALL RESIDENTS IN NEED.

Objective 1: Alternative forms of care for the terminally ill cancer patient and his family, such as hospice, are to be encouraged by 1983 (see Goal II, Long Term Care Component).

Recommended Action 1: Position papers for development and implementation of hospice programs which delineate possible organizational models, program descriptions, etc. should be developed by 1981 through cooperation among the MDPH, RCCC, HSAs and others.

Recommended Action 2: Methodologies for projecting need for hospice-type resources should be developed by 1981.

Recommended Action 3: Evaluation of the appropriateness and cost-effectiveness of hospice as an alternative for care of the terminally ill should be accomplished by 1982.

Recommended Action 4: Upon completion of models development, projection methodologies and alternatives study, government agencies including the MDPH, Massachusetts Department of Public Welfare and the Rate Setting Commission should take appropriate action to support rational growth of hospices. Attention should be paid in particular to defining appropriate government roles in monitoring and regulating development of programs and in reimbursement policies.

Objective 2: An adequate supply of appropriate and equitably distributed health manpower involved in cancer control should be available to deliver needed services. Continuing education needs of such manpower will also be considered.

Recommended Action 1: The MDPH, with HSAs and other interested groups, will develop a needs assessment methodology to examine cancer manpower needs; project need for manpower; and develop a long range plan by 1985 to ensure appropriate availability of manpower and continuing education resources.

Objective 3: By 1983, approaches should be developed for securing databases to identify populations in need of cancer control services and to support improved cancer systems planning.

These include a methodology for developing a total statewide database on cancer incidence, the most viable approach being a statewide cancer incidence registry operated by state government; and the feasibility and utility of adding a minimum data set on occupational and selected lifestyle history to tumor registry data sets.

Recommended Action 1: A statewide cancer incidence registry should be established, with cancer as a reportable disease.

Recommended Action 2: The MDPH, RCCC and others should work together to ensure the availability of appropriate state government and other resources

to implement the above recommendation. The registry should coordinate data collection through regional tumor registries to the degree possible, and the current use and future development of these registries in medical care evaluation and patient monitoring should not be hindered by the establishment of the state registry (see Goal V, Objective 1, Recommended Action 2).

Recommended Action 3: The MDPH should participate with the RCCC and its Registry Subcommittee in a substantial planning effort to develop recommendations for a minimum data set, common data output formats and reports, and implementation by regional and/or state agencies.

Recommended Action 4: Beginning in 1980, the MDPH will work with the RCCC and its Registry Subcommittee, with HSAs and with other experts to design and conduct a pilot study to determine if occupation and lifestyle data can be collected.

GOAL III: EFFECTIVE CANCER CONTROL INTERVENTIONS SHOULD BE ACCESSIBLE TO ALL RESIDENTS IN NEED.

Objective 1: Prevention, screening and detection interventions known to be effective in cancer control should be better targeted to populations most in need by 1985 (see also Prevention Component section on occupational initiatives). For breast cancer, this should particularly include elderly female and non-white female populations.

Objective 2: Radiation therapy services should be effectively coordinated with other acute cancer management resources by 1985 so that they are accessible to cancer patients in need and are appropriately used.

Recommended Action 1: Radiation therapy standards and measures for Determination of Need should be developed by 1980.

Recommended Action 2: Recommendations for long range planning of radiation therapy services within cancer management systems should be developed at the regional and state level by 1982.

Objective 3: Guidelines for appropriate use of mammography as a screen for breast cancer should be developed within cancer management systems at the regional and local level by 1983. These guidelines should include

recommendations for use by specific population groups; dedication of units with appropriate staffing, equipment and maintenance; and procedures for patients proceeding to further diagnostic services as needed.

Recommended Action 1: HSAs will encourage the development of such guidelines by the most appropriate groups within their regions by 1981.

Recommended Action 2: The Regional Cancer Control Committee will provide technical assistance as requested on possible model guidelines for consideration by these local groups beginning in 1980.

Recommended Action 3: The Massachusetts Department of Public Health will investigate the appropriateness of revising radiation control regulations to include a section on mammography by 1982.

GOAL IV: DELIVERY OF EFFECTIVE CANCER CONTROL INTERVENTIONS SHOULD TAKE INTO ACCOUNT THE ACCEPTABILITY OF SUCH CARE TO RESIDENTS IN NEED, CANCER PATIENTS THEMSELVES, AND THEIR FAMILIES.

(see also hospice objective under availability).

Objective 1: Breast cancer patients should participate in deciding on the type of treatment they receive.

Objective 2: By 1980, breast cancer patients should be guaranteed full disclosure in an unbiased manner of treatment alternatives for breast cancer; such disclosure should occur prior to treatment.

Recommended Action 1: Beginning in 1980, HSAs should work with regional cancer management systems, PSRO committees or other multi-disciplinary provider groups in the development and sharing of written materials about treatment alternatives.

Recommended Action 2: HSAs, the Regional Cancer Control Committee, the American Cancer Society and others should support public and provider education about the rights of breast cancer patients concerning information about treatment alternatives. Where not already underway, this activity should begin to take place in 1980.

GOAL V: CANCER CONTROL INTERVENTIONS DELIVERED TO RESIDENTS IN NEED SHOULD BE OF CONSISTENTLY HIGH QUALITY.

Objective 1: Ongoing medical care evaluation following clinical guidelines established with multi-disciplinary involvement should be performed within cancer management systems by 1985.

Recommended Action 1: Health Systems Agencies should encourage cooperative linkages between organized cancer management groups and local PSROs in conducting medical care evaluation of cancer cases of high priority to local systems by 1982.

Recommended Action 2: The development and strengthening of regional tumor registries to support ongoing medical care evaluation and monitoring of cancer patients should be supported by the MDPH, HSAs, the RCCC and others by 1982.

Objective 2: By 1985, operating cancer management systems shall have developed clinical guidelines for the diagnosis, evaluation, treatment and continuing care of breast cancer patients.

Objective 3: PSROs should make development of breast cancer standards and review criteria a high priority by 1982. These should address at a minimum: (a) outpatient biopsy; (b) pretreatment evaluation; (c) alternatives to radical mastectomy; (d) continuing care; (e) treatment volume.

Objective 4: Breast cancer patients should not be treated without confirmation of diagnosis and completion of adequate pretreatment evaluation.

Recommended Action 1: The MDPH in cooperation with the Department of Public Welfare, Blue Cross/Blue Shield and other insurers, the Social Security Administration (Medicare), RCCC, and others will explore the potential of improving reimbursement incentives which, based on clinical guidelines developed, encourage the timed separation of biopsy from treatment and performance of biopsy on an outpatient basis as appropriate by 1985.

GOAL VI: DELIVERY OF CANCER CONTROL SERVICES SHOULD BE ACCOMPLISHED IN AN EFFICIENT AND COST-EFFECTIVE MANNER.

Objective 1: Consideration of the substantial social and other costs borne by cancer patients and their families, and by the state as a whole, shall be given in development of regional and statewide policy in cancer control.

Objective 2: Economic and financial considerations should be more aggressively addressed in cancer planning and policy development.

Recommended Action 1: The MDPH should establish a coordinated economic and financial data base by 1985 which can be used in cancer planning and policy development, and it shall provide technical assistance in uses of such data by others.

GOAL VII: CANCER CONTROL RESOURCES SHOULD BE ORGANIZED TO ENSURE CONTINUITY OF CARE FOR THE POPULATION SERVED.

Objective 1: The care of all cancer patients through all phases of care should be supported by a multi-disciplinary team approach by 1985.

Objective 2: Improved use of tumor registries to monitor the continuing care of cancer patients is to be encouraged by 1984.

Objective 3: Models for regional cancer management systems delivery to be developed by 1983 should include recommendations for multi-professional and multi-institutional relationships which support continuity of care.

Objective 4: A formal plan for continuing care for all breast cancer patients should be developed and implemented by a multi-disciplinary team; this plan should be included in the patient's hospital record by 1983.

Objective 5: HSAs should include an assessment of the availability and accessibility to continuing care services for breast cancer patients where breast cancer planning has been designated as a priority.

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